Augmented Video Self-Modeling as an Intervention Technique for Young Children with Selective Mutism: An Explanatory Sequential Study

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Abstract

This mixed methods study examined efficacy of augmented video self-modeling (VSM) as an intervention technique for young children with selective mutism (SM). Participants included 3 children aged 8 (including a set of twins) and their parents and classroom teachers. The first, quantitative phase was guided by Kehle, Madaus, Baratta, and Bray (1998), who proposed using augmented VSM as an intervention package comprising a combination of video self-modeling, stimulus fading, and reinforcement behavioural techniques. The second, qualitative phase was to identify participants' experience and perspective on augmented VSM, and to examine contexts and individual cases of SM and results obtained from the first phase of the study. Parents, teachers, and the researcher conducted a comprehensive assessment of participants' verbal behaviour across multiple settings and throughout baseline, intervention, post-intervention, and 1-month follow-up. Interviews with open-ended questions elicited perspectives of parents and teachers, while close-ended post-intervention questionnaires with the children revealed individual experience with the intervention. Statistical analyses indicated participants' verbal communicative behaviour increased significantly during post-intervention, and their progress was maintained at 1-month follow-up. Communication scores increased significantly for all children. All parents and teachers rated the intervention as effective, with one parent further commenting that intervention results exceeded her expectations. A recent meeting with the school board's Speech Language Pathologist revealed the 3 participants are speaking freely inside the school, and that the twins are indistinguishable from other children 1 year post-study. Limitations of the study and future research implication and direction are discussed.

Acknowledgements

When I enrolled in the Master of Education program, my goal was to learn how to equip educators to help my son overcome selective mutism (SM) at school. After many years of extensive research, I gained a vast amount of knowledge and was able to assist my son to regain his voice. Despite that my son had overcame SM upon the completion of my master's degree, I decided to continue on with the SM research so that one day I would be able to assist other children and their parents on their journeys in SM recovery.

That day arrived last year, when I formally and successfully assisted three children with SM to regain their speech in selected settings. Hence, I would like to take this opportunity to express my sincere gratitude to everyone who has helped me accomplish the dissertation study. First and foremost, a heartfelt thanks to the participants, their parents, and classroom teachers for trusting me and taking their time to participate in this study. I am so thrilled with the intervention outcome! I would also like to thank the school's Speech Language Pathologist, Lori DiMatteo Marcella, for assisting in the recruitment process, so that I was able to conduct the study in a timely manner.

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CHAPTER ONE: INTRODUCTION AND PURPOSE OF THE STUDY

Children with selective mutism (SM) converse freely at home yet persistently fail to speak in social settings such as at school. This disturbance of speech is caused by an immense anxiety; this impairment not only strips the child's ability to communicate even under urgent situations, it also creates an exasperating experience for educators who feel ill-prepared to help (Omdal, 2008).

Because SM onset typically coincides with school entry and remains most symptomatic within the school context, this disabling condition paralyzes a child's ability to communicate inside the school from the start. The fact that many educators are unfamiliar with this disorder (Omdal, 2007), SM presents a significant challenge to educators who consistently fail to successfully entice the child to speak or communicate.

Background Problem

Research has demonstrated that the cardinal symptom of SM—stripping one's ability to communicate on a daily basis—can be debilitating on a child's educational, emotional, and social experiences (McInnes & Manassis, 2005). Additionally, without proper diagnosis and timely intervention, SM can persist into adulthood and negatively impact an individual's overall wellbeing (Remschmidt, Poller, Herpertz-Dahlmann, Henninghausen, & Gutenbrunner, 2001).

SM can also become further entrenched with each failed intervention. Shipon-Blum (2011) stressed that an *appropriate* and *effective* technique is another important determinant for intervention success. In light of this, appropriate techniques that yield rapid resolution of the disorder are of utmost importance (Shipon-Blum, 2011). Unfortunately, not only do many SM intervention techniques last for over a year, but they

also fail to yield positive results (e.g., Giddan, Ross, Sechler, & Becker,1997; McLeod, Rogers, & Newberry, 2010). As such, the ongoing need to explore intervention modalities that are both viable and effectual remain a pressing issue.

Despite over a century of documentation (Sharkey & McNicholas, 2008), controversial debate over which intervention approach is more efficacious for SM continues. While research evidence had demonstrated the rapid resolution of SM with pharmacological treatment (e.g., Black &Uhde, 1994; Bork & Snyder, 2013; Kehle, Madaus, Baratta, & Bray, 1998; Lehman, 2002), many parents and physicians are reluctant to use medication due to its possible adverse effects (Schwartz, Freedy, & Sheridan, 2006). Consequentially, the majority of SM interventions continue to focus on behavioural approaches, which can takes years with no guarantee of success (Shipon-Blum, 2011).

Rationale for the Study

Potentially, a non-intrusive behavioural technique such as augmented video self-modeling (VSM), which has yielded impressive results where "speech occurred immediately after the onset of treatment" (Kehle et al., 1998, p. 257) could help bridge this divide between pharmacological and behavioural modalities with respect to the treatment speed of SM. Despite Kehle et al.'s success, there have been very limited recent studies that incorporated augmented VSM in SM intervention. Thus, research on the effectiveness of augmented VSM for SM is warranted "to allow for additional meta-analytic evaluation of SM interventions" (Cohan, Chavira, & Stein, 2006, p. 1095).

Note that *augmented* VSM is a packaged behavioural technique in which VSM is accompanied by stimulus fading and reinforcement techniques. Kehle et al. (1998)

asserted that since self-modeling, stimulus fading, and reinforcement all have demonstrated success in some studies, combining them may produce the greatest probability of rapid restoration of normal speech.

The current investigation explored the effectiveness of augmented video self-modeling (VSM) as an intervention strategy for SM. More specifically, this mixed methods study examined whether augmented VSM could positively impact three 8-year-old students' verbal behaviour within the school, as well as explored the perspective and experience of augmented VSM from the participants and stakeholders.

Research Questions

This study was guided by the following research questions:

1. Is augmented VSM an effective strategy in resolving the mute behaviour of young children with SM? After intervention, will these children engage in more verbal communications across all settings (i.e., home, school, and community), and will the speaking behaviour be maintained at the 1-month follow-up?
2. What are the perceptions and experiences of teachers, parents, and children regarding the use of the augmented VSM technique? This question focuses on three areas: (a) What perceptions of the effectiveness of the strategy do the stakeholders narrate? (b) How do the participants and stakeholders experience the augmented VSM intervention? and (c) How do the stakeholders describe their expectation for and the impact of the strategy?

Significance of the Study

Since SM can become further entrenched with each failed intervention, Shipon-Blum (2011) stressed that an *appropriate* and *effective* technique is another important

determinant for intervention success. This study explored the effectiveness of augmented VSM technique for SM as posited by Kehle et al. (1998). It also explored the perspective of the participants and stakeholders by gaining a deeper understanding of the impact of augmented VSM.

Once disseminated, this study will demonstrate the importance of SM education and awareness, so that children with SM can be diagnosed appropriately and be provided with the timely support.

Definition of Terms

While all parents, teachers, as well as the children with SM (N=7) participated in the second (qualitative) phase of the study; in order to avoid confusion, *participants* in this study refer to the children with SM who received the augmented VSM intervention. S*takeholders* refer to the parents and teachers of the participants. Stakeholders are not the focus of the intervention. *Generalization* refers to a child who generalizes her speech from one location to the next, and or from one person to another. Finally, *response to verbal demand* (e.g., what would you like to eat?) is used to describe whether a child respond to the verbal demand with a facial expression, body gesture, verbally, or with no response at all.

Chapter Summary

Selective mutism is a speech paralyzing condition that has negative impact on a child's social and academic development (McInnes & Manassis, 2005). Because SM can persist into adulthood if left untreated (Schwartz et al., 2006), it can potentially create a risk of future anxiety psychopathologies such as depression (Remschmidt et al., 2001). In addition, the association of adverse effects of pharmacological treatment has popularized

the behavioural approach for SM. Because conventional behavioural therapy tend to be time consuming, the augmented VSM approach used by Kehle et al. (1998) in which "rapid speech acquisition" (p. 248) occurred after treatment onset warrants special attention and further investigation. This mixed methods study examined the effectiveness of augmented VSM as an intervention technique for SM through quantitative and qualitative measures.

CHAPTER TWO: REVIEW OF THE LITERATURE

It is important to have an etiological understanding of selective mutism (SM) in order to appreciate what constitutes an efficacious intervention. This chapter provides an overview of SM including its characteristics, epidemiology, and intervention approaches that are developed based on the etiological perspectives. Behavioural approach is delineated, as it is most frequently used for SM (Garcia, Freeman, Francis, Miller, & Leonard, 2004). In particular, behaviourist Bandura's (1977) social learning theory is emphasized, which provides a theoretical framework for the augmented video self-modeling (VSM) technique that was utilized in the present study.

Overview of Selective Mutism

Selective mutism is an anxiety condition, which paralyzes a person's ability to speak in a selective context. Children with SM persistently fail to speak in social contexts such as school, despite being able to speak freely in familiar settings such as the home (American Psychiatric Association, 2013). This discrepancy of speaking in one context but not in another, lasts for more than one month and is not caused by either a developmental or communicational disorder, or a lack of knowledge of the spoken language (APA, 2013). The complete diagnostic criteria are included in Appendix A.

Characteristic

Children with SM tend to exhibit behaviours that are similar to shyness (Schwartz et al. 2006). These traits include avoiding eye contact, blushing when spoken to, exhibiting social withdrawal when speech is expected, and fidgeting. It is important to note that each child with SM is unique. Some children are able to use gestures and speak to a few friends, while others freeze on the spot when spoken to. The level of anxiety on each child can change from person to person and from setting to setting (Schwartz &

Shipon-Blum, 2005). For instance, a child with SM can speak freely at home with immediate family members, yet be unable to speak to them when others are visiting and or when they are in the public.

SM is also linked to avoidant disorder, separation anxiety disorder, and social phobia (Kristensen, 2000). Additionally, several studies on SM administered IQ tests on the children and established an association with developmental delays (e.g., Kehle et al.,1998; Kristensen, 2000; Manassis et al., 2003). However, some researchers argued that there is little evidence to support the notion of developmental delays in children with SM (Black & Uhde, 1995; Schwartz et al., 2006). They assert that SM is not a developmental issue but an anxiety disorder, closely related to social phobia.

Epidemiology

Selective mutism may not be as rare as previously thought (Toppelberg, Tabors, Coggins, Lum, & Burger, 2005). In comparison to obsessive compulsive disorder (5 per 1,000) and major depressive disorder (4 per 1,000), studies on SM yielded a prevalence of 7.1 per 1,000 (Bergman, Piacentini, & McCracken, 2002) to nearly 2% (Kumpulainen, Räsänen, Raaska, & Somppi, 1998) in the school based samples. The variability of these estimates may be a result of: (a) a lack of SM awareness among the general public so that children with SM are not identified or are being misdiagnosed; and or (b) a lack of a "standardized and well validated measure" (Bergman, Keller, Piacentini, & Bergman, 2008, p. 457) that distinguishes SM from social phobia or other anxiety disorders.

Unlike children with externalizing disorders who are more disruptive inside the classroom, children with SM tend to be quiet with a compliant nature. They are often under-recognized by teachers (Letamendi et al., 2008). In addition, since children with SM do speak freely with immediate family members, most parents are unaware of their

child's mutism behaviour until the teacher reports the concern (Sharp, Sherman, & Gross, 2006). In fact, 70% of children with SM are never diagnosed or referred even though they have never spoken in the doctor's office (Schwartz et al., 2006). This lack of awareness may explain why many health care professionals believe the child is simply shy and will "outgrow" the silent behaviour (Schwartz & Shipon-Blum, 2005; Schwartz et al.). As such, it is safe to assume that the reported prevalence rates may inaccurately reflect the SM population.

Effect of Selective Mutism

The delay in diagnosis and treatment of SM can contribute to several detrimental consequences. Since the SM onset age is between 2.7 and 4.1 (Garcia et al., 2004), while many children are not provided with intervention until the age of six to nine (Remschmidt et al., 2001), some children may spend upwards of 4 years exhibiting restricted speech in school (Sharp et al., 2006). This "scared speechless" (Viana, Beidel, & Rabian, 2009, p. 59) response to an anxiety-provoking environment paralyzes a child's ability to communicate even under urgent situations. For instance, classroom accidents are frequent as these children are unable to ask to go to the bathroom. Over time, it is not surprising that children with SM are found to be significantly deficient in both verbal and nonverbal social skills (Cunningham, McHolm, & Boyle, 2006), and have elevated internalizing problems and are more withdrawn as compared to their same-age peers (Bergman et al., 2002; Vecchio & Kearney, 2005).

Research evidence indicates that SM is an impairment condition that adversely impacts a child's social and academic achievements (Manassis et al., 2003) as well as self-esteem (McInnes & Manassis, 2005); and this impairment can persist into adulthood if left untreated (Remschmidt et al., 2001). Given that childhood anxiety is a predecessor

of other anxiety disorders, major depression, suicide attempts, and psychiatric hospitalization in adulthood (Hammerness, Vivas, & Geller, 2006), it is important not to overlook the potential risk of future anxiety psychopathology and other issues related to long-term impacts of SM.

Early Intervention

Early intervention is the most important factor for addressing SM. It is postulated that most children's mutism behaviour has been unintentionally reinforced by peers and parents who speak for them, and or by teachers who withdraw their request of speech on a daily basis (Omdal, 2008; Wong, 2010). Over time, this mute behaviour serves as a coping mechanism (e.g., people will withdraw their request for speech when the child remains mute) as it becomes habitual and entrenched (Omdal, 2008; Sloan, 2007).

The urgent need to recognize SM and to initiate intervention promptly cannot be overstated especially given that: (a) SM is treatable with early diagnosis and appropriate management (Schwartz & Shipon-Blum, 2005); and (b) SM does become resistant to treatment as time progresses if it is not properly addressed. There is evidence to suggest that few children are "cured" during the early primary school years when appropriate intervention is delayed until after the child turns seven (Schwartz & Shipon-Blum, 2005). In fact, only 30% to 40% of children will speak to a wide circle of schoolmates if they are diagnosed and treated appropriately after age 12 (Bergman, 2004). While timely intervention is a key factor to success, an *appropriate* and *successful* intervention is of paramount importance because when a child with SM is not treated properly, he or she tends to become more resistant to subsequent interventions (Shipon-Blum, personal communication, December 2, 2011).

Etiology and Intervention for Selective Mutism

Intervention approaches for SM are generally derived from the diverse beliefs in the conceptualization of SM and the specific understanding of its etiology, course, and maintenance (Manassis, 2009; Viana et al., 2009). Hence, I believe it is important to discuss the existing understanding of SM conceptualization—psychological, biological, behavioural, and multifaceted—while elucidate each intervention methodology that reflects the specific etiological understanding.

Psychological Factor

The early psychodynamic theory views SM as a result of traumatic events, unresolved intra-psychic conflicts such as delayed grief, or family dysfunction with an overprotective mother (e.g., Colligan, Colligan, & Dillard, 1977; Hayden, 1980). Consequently, the goal of psychodynamic interventions is to help the child identify and express their inner conflicts through the use of art and play, and to help the child realize that there is no need to remain silent (Cohan et al., 2006).

Many researchers have abruptly dismissed the psychodynamic perspectives. Manassis et al. (2003) noted that if traumatic events were the cause of mutism behaviour, then these children would be mute consistently across all settings instead of being *selectively* mute. Researchers also found most psychodynamic case studies lacked systematic assessment and relied heavily on the clinician's point of view (Brigham & Cole, 1999; Garcia et al., 2004). In addition, psychodynamic approaches seem to be most time consuming and least effective (Garcia et al., 2004).

Biological Factor

Children with SM seem to share common family characteristics, behavioural inhibition, and a shy temperament (e.g., "slow to warm up" in unfamiliar circumstances)

(Kristensen &Torgersen, 2001). As well, parents of children with SM also seem to have higher rates of avoidant personality disorder and generalized social phobia (Chavira, Shipon-Blum, Hitchcock, Cohan, & Stein, 2007). There is also evidence indicating higher rates of family histories of psychopathology and taciturnity among SM families (Steinhausen, Wachter, Laimbock, & Metzke, 2006).

Black and Uhde (1995) noted that 97% of the children with SM also met the criteria for social phobia (SP), avoidant disorder, or both. Another study investigated the relationship between children with SP and those with SM, and found no difference in the social anxiety level exhibited by both (Manassis et al., 2007). The similarities highlighted between children with SM and those with SP have helped shed light on the conceptualization of SM as an anxiety disorder (Vecchio & Kearney, 2005). However, it is intriguing that, unlike children with SP, some children with SM do enjoy social activities that are non-verbal. As such, longitudinal studies, especially those with larger sample sizes are needed to further clarify the relationship between SP and SM.

The genetic vulnerabilities associated with the causation of SM have been demonstrated through several studies (e.g., Black & Uhde, 1995; Chavira et al., 2007; Kristensen & Torgersen, 2001; Schwartz et al., 2006; Steinhausen, et al., 2006). Schwartz et al. (2006) noted that 9% of their SM participants involved siblings, 12% had a family history of SM and 33% had SP. An earlier study involving 30 children with SM found that 70% of their first-degree relatives had SP, and 37% had SM (Black & Uhde, 1995). These biological factors have expanded treatment of SM to include serotonergic medication that is often used for various forms of anxiety disorders (Sweeney & Pine, 2004). Among the Selective Serotonin Re-uptake Inhibitors, fluoxetine (i.e., Prozac©) is

found to be safe and effective with minimal side effects in SM interventions (e.g., Black & Uhde, 1992, 1994; Bork & Synder, 2013; Dummit, Klein, Tancer, Asche, & Martin, 1996; Manassis &Tannock, 2008). Despite its effectiveness, many physicians and parents are apprehensive about using the medication because of possible adverse effects that can include suicidal thoughts.

Multifaceted Factor

Since no single mechanism "accurately captures the complexity of ontogenic development" (Viana et al., 2009, p. 59) of SM, some researchers believe that SM is a heterogeneous condition which results from complex interactions between genetic, psychological, temperamental, developmental, and environmental factors (Kristensen & Oerbeck, 2006; McLeod et al., 2010; Schwartz et al., 2006; Sharkey & McNicholas, 2006; Viana et al., 2009). As elucidated, temperamental and genetic vulnerabilities may serve as a basis for SM. The child experiences an event that is stressful (e.g., their first foray into school) enough to trigger the mutism behaviour as he or she freezes on the spot while responding to anxiety-provoking situations. Over time, this mutism behaviour becomes entrenched as the child faces similar situations and a habit is formed. In order to address these potential etiological factors, multifaceted (also known as multimodal) approaches are often needed to address factors that contributed to the fostering and maintenance of SM.

A multimodal intervention approach that involves multidisciplinary (various treatment techniques) and multiagent (various personnel) is especially needed for an older child, a child with severe symptoms or with multiple comorbidities, or in the treatment-refractory cases (Garcia et al., 2004). Since the severity of SM varies and is most predominant inside school, an ideal intervention plan should be tailored to a specific

child and be carried out in the school environment (Sloan, 2007). Despite time consuming, successful school-based SM interventions involving a multimodal approach have been documented in several case studies (e.g., Jackson, Allen, Boothe, Nava, & Coates, 2005; Sloan, 2007).

Behavioural Factor

Environmental influences such as learned avoidance behaviour may be another contributing factor leading to SM. Because many parents of children with SM have suffered from SM or social phobia (Black & Uhde, 1995), these parents generally prefer to be alone and avoid social contact with others (Kristensen & Torgersen, 2001). It is possible that children who are fostered under these environments may have *learned* the avoidance behaviour from their parents through modeling (Viana et al., 2009).

Behaviour intervention is a well-established method with empirical support (McHolm, Cunningham, & Vanier, 2005; Pionek Stone, Kratochwill, Sladezcek, & Serlin, 2002). The method is considered nonintrusive, and can be implemented within the school and or at home by teachers and or parents. Behavioural techniques documented in the literature include shaping, reinforcement, contingency management, self-modeling, stimulus fading, and systematic desensitization (Cohan et al., 2006). Most often, several behavioural approaches are combined as one intervention. For instance, reinforcement—rewards upon demonstrating the desired behaviour—often accompanies exposure-based approaches such as stimulus fading and systematic desensitization to provide an incentive/award for new behaviour. For example, when a child with SM views an edited video that depicts him or herself talking to an anxiety provoking figure (exposure based self-modeling technique), he or she immediately receives a tangible item as a reward—reinforcement (see Sloan, 2007 for details).

It is important to note that a *pure* behavioural approach rather than a cognitive behavioural approach is considered more appropriate for SM because: (a) cognitive behavioural approach requires a child to share his or her feelings and thoughts with the therapist through the use of speech, but SM children are unlikely to be comfortable speaking to a therapist; (b) most identified SM sufferers are younger children and their sensorimotor and cognitive immaturity may present an obstacle for them to use insight and to think in abstract ways to solve problems (Cohan et al., 2006); and (c) the recent conceptualization of SM as an anxiety disorder provides a pragmatic behavioural approach for its assessment, research and treatment that are used for other childhood anxiety disorders (Sharp et al., 2006).

Aligned with the above rationale, this study also used a purely behavioural approach with the young participants. The following section discusses the theoretical framework that underpins behavioural approaches. Specifically, Bandura's (1977) social learning theory and the association between modeling and self-efficacy are delineated further

Behaviourism. Behaviourism is an approach to psychology that claims all behaviour can be explained and described without making reference to internal psychological processes or mental events (Santrock, 2004). Behaviourist claim that behaviours are driven or shaped by external factors within the *environment* that we live in (Graham, 2010). Behaviourists also believe that learning occurs through interactions with the environment, and that a person's behaviour is a result of *learned* adjustments to that environment (Erk, 2003). For instance, when a child with SM is spoken to, he or she avoids eye contact, evades engaging in activities that require speech, remains silent (or

freezes in place when spoken to), and prefers to interact with others nonverbally—a learned adjustment. These avoidance behaviours serve to temporarily reduce the anxiety associated with speaking situations, and are strengthened as the child repeatedly faces similar situations. In line with this, a learned behaviour such as SM can be un-learned through behaviour modification. In order to *un-learn* the mute behaviour, the social environment of the child requires gradual modification in order to distinguish the reinforcers (e.g., withdrawal of request for speech) that help maintain the mutism behaviour while simultaneously decreasing anxiety to elicit speech. Major behaviourist learning theories include classical conditioning theory (Pavlov, 1927), operant conditioning theory (Skinner, 1953), and social learning theory (Bandura, 1986). The common goal of these theories is to apply the rules of learning—conditioning and extinction—to alter the observable behaviour (i.e., mutism).

Classical conditioning. Classical conditioning (Pavlov, 1927), also known as the respondent conditioning, asserts that response is unconscious, and that learning occurs through associations between a stimulus that exists in the environment (e.g., expectation to speak is an anxiety provoking stimulus for children with SM) and a stimulus that naturally occurs (e.g., the child's unconscious response to the anxiety by freezing on the spot and remaining mute). As such, new behaviour can be learned (and old behaviour can be eliminated) by manipulating the association between the naturally existed stimuli and the unconscious response to that stimulus through acquisition and extinction. Stimulus fading, for instance, is an exposure-based strategy that is based on classical conditioning principles (Garcia et al., 2004) in which a child with SM learns to disassociate fear with speaking while simultaneously acquires the confidence to speak through gradual reinforcement.

Implementation of stimulus fading for SM intervention aims to change/neutralize the stimuli (e.g., anxiety-provoking figures, location such as school) that control speech. For instance, a child with SM speaks freely and plays a board game with his or her mother inside the school library with the door closed (a stimulus perceived as being safe). Gradually, the door opens and one by one, the peers of the child join the board game (the safe stimulus is faded out, and more threatening ones are faded in). As time passes, the child with SM learns to speak in front of his or her peers because association between environmental stimulus (people) and naturally occurring stimulus (anxiety) is faded.

Operant conditioning. Conversely, operant conditioning theory (Skinner, 1953) argues that any response is performed intentionally and that it is the history of *reinforcements* (past pleasant or unpleasant experience) that determines an individual's action (e.g., a child with SM decides to remain mute because he or she learns from previous experience that people will eventually withdraw their request for speech). Skinner asserted that reinforcement (both negative and positive) plays an important role in behaviour conditioning. Thus, a child's mute behaviour is often negatively reinforced by the withdrawal of repeated requests for speech (Krysanski, 2003; Omdal, 2008; Wong, 2010). For instance, a teacher allows other students to answer questions on behalf of the child with SM after he or she fails to respond. Similarly, the child's mute behaviour is reinforced when the parent answers questions for the child in social settings. Over time, this child becomes accustomed to not speaking and a habit is formed (McHolm et al., 2005). In light of this, desirable behaviour can also be shaped or modified through a series of rewards (positive reinforcement). Many behavioural techniques such as shaping and reinforcement are established based on these principles.

Social learning. Bandura (1977) argued that not all learning results from direct reinforcement. He proposed the social learning theory—where an individual learns in social contexts by observing and *modeling* others' behaviours. Accordingly, the mute behaviour of children with SM may have been learned through observing and modeling others, and also can be unlearned. However, Bandura also recognizes that observing does not necessarily lead to learning. He maintains that self-efficacy—an individual's belief in the ability to succeed in certain situations—is a determinant factor on how a person feels, thinks and behaves.

A person with a strong self-efficacy tends to view challenging task as manageable, and can recover from failures quickly. A person with a weak self-efficacy tends to view challenging tasks to be beyond his or her capabilities and avoids those tasks. Since observing and witnessing others accomplish a task is an important source of self-efficacy, it is even more persuasive to see someone *similar to oneself* accomplish that task. This concept seems ideal for SM intervention, as children with SM have the ability to speak, but may lack the self-efficacy that they can do so in social contexts. Indeed, self-modeling (also known as the video self-modeling—VSM) approach, "has been remarkably successful" (Kehle, Bray, & Theodore, 2004, p. 168) for SM intervention. As such, it is the main technique used for the present study.

Self-modeling. Bandura's (1986) social learning theory postulates that learning occurs within social contexts, and that an individual learns from others by observing, modeling and imitating them. However, observing alone does not necessarily lead to learning, as behavioural change is mediated by self-efficacy. In other words, self-efficacy is a key factor in promoting learning. Since the sense of self-efficacy can be enhanced

through observing models performing and accomplishing the challenging tasks and that children are most likely to model someone they perceive as competent and more *similar* to themselves in some ways (Bandura, 1994). Based on this theory, "the technique of modeling has been further explored and implemented using video technology, which provides a vehicle for self-modeling" (Bellini & Akullian, 2007, p. 266).

Video self-modeling for selective mutism. Given that children with SM do not speak in anxiety-provoking situations, how could they observe themselves and acquire the skill to speak in anxiety-provoking situations? Historically, audio self-modeling was used because it was more economical to produce (Blum et al., 1998). Audio self-modeling involves audio recording a child speaking at home and then playing it in contexts where the child does not speak to desensitize the child's fear of being heard speaking. Similarly, the goal for using VSM is to increase the child's self-efficacy and to desensitize the child's fear of being seen and heard speaking "through repeated observation of oneself on videotapes" (Dowrick & Dove, 1980, p. 51).

To accomplish this, a child with SM is video recorded in the classroom answering questions posed by the mother. Then, the classroom teacher whom the child does not speak is video recorded with other students in the same classroom, asking the same questions. The footage is then edited and augmented to appear as if the child is responding to questions from the teacher in front of the classmates. After repeated viewing of the video recording, the child with SM becomes accustomed (desensitized) to seeing him or herself speaking to the teacher and begins to believe in his/her own ability to do so (increase self-efficacy), and then starts speaking to the teacher during regular class time.

An earlier study conducted by Kehle, Owen, and Cressy (1990) argue that not

only is VSM simple to use, relatively inexpensive to administer, and requires little time to implement, it is also "the least restrictive and least intrusive" (p. 115) form of intervention for SM, and well suited to fit the least restrictive components of a hierarchical educational model (Kehle et al., 1998).

Augmented Video-Self Modeling

The first (quantitative) phase of this study employed augmented VSM technique to intervene the mutism behaviour of three participants. The augmented VSM technique was developed and tested by Kehle et al. in 1998. They argued that not only is it important to intervene in SM promptly, but to do so with a single packaged intervention consisting of multiple proven techniques. Since self-modeling, stimulus fading, self-reinforcement, along with the mystery motivator and spacing effects have been demonstrated as efficacious in some studies, combining them may produce the greatest probability of rapid restoration of normal speech (Kehle et al., 1998).

Video Self-Modeling

In Kehle et al.'s (1998) study, the participants were required to view the edited recording of themselves conversing with their classroom teachers in a private area within the school, and also to view the same recording inside the classroom once with all the peers. The goal for the repeated VSM sessions was to desensitize the children's anxiety associated with speaking and to increase their self-efficacies (Bandura, 1986). The goal for the VSM conductedin front of the whole class is to increase the peers' expectation of speech and to discourage them from speaking for the children with SM.

Stimulus Fading

Stimulus fading is an exposure-based strategy that is based on classical

conditioning principles (Garcia et al., 2004). This procedure typically involves the gradual introduction of peers and the teacher into settings where the child is comfortable conversing (e.g., with the mother's presence). For instance, a child with SM plays a game of Go-fish and freely converses with her mother inside the classroom before school starts. Then, a peer whom the child does not speak to—a fear stimulus—joins in to the activity. When the child with SM becomes comfortable and speaking freely at the presence of his/her peer, another peer joins in, and so, or until the child's speaking circle widens. In this way, stimulus fading approach is implemented and achieved.

Self-Reinforcement

Self-reinforcement "requires adoption of performance standards…on which a given behaviour warrants self-reward" (Bandura, 1976, p. 134). In other words, the child rewards himself or herself with a sticker or a candy contingent on appropriate behaviour. For instance, whenever a child with SM observed him or herself responding to the teacher's questions (an anxiety provoking task) on the edited video recording, he or she was allowed to reward him or herself with a reinforcer such as a sticker, silly putty, or candy. The goal is to desensitize the child of his/her fear stimulus by constantly exposing it until the stimulus no longer poses a threat to the child (see stimulus fading above).

Mystery Motivator

Mystery motivator is defined as a hidden reward used to increase the anticipation and worth of the reinforcer (Rhode, Jenson, & Reavis, 1993). The reward typically consists of a tangible item such as a video game previously indicated as desirable by the child. This reward is placed inside a manila envelope with a question mark and the child's name, and openly displayed inside the classroom. The class is told that this mystery reward will be

given to the child once he or she asks in a voice that is audible to everyone.

Spacing Effect

Spacing effect refers to the finding that spaced presentations yield significantly better learning in comparison to a single massed presentation of material (Dempster, 1988). In concert with this, the edited self-modeling video recording ranging from five to seven minutes were shown to children with SM on several occasions rather than all at once to incorporate a spacing effect. In Kehle et al.'s (1998) study, one child viewed five edited recording in 4 weeks, the second child viewed the recording five times in 5 weeks, and the third child viewed his four times within 10 days due to immediate and positive responds.

Other Intervention Factors

Children with SM predominately fail to speak at school (Black & Uhde, 1995; Cohan et al., 2006; Standart & Le Couteur, 2003). Therefore, it is essential that intervention to be conducted within the school (versus the clinical setting) to address the symptoms at their source.

Many children with SM do not speak with their classroom teachers. Thus, informed teachers can play an important role in intervention, especially when the intervention goal is for the child to verbally communicate with teachers. Moreover, teachers can pay daily observation of the child, which is essential when daily verbal fluctuation assessments are needed. Finally, classroom teachers are helpful in identifying supportive peers as well as the school-related anxiety-provoking stimuli affecting the child's speech, so that the anxiety-laden circumstances can be identified, and strategies can be tailored to assist the child to overcome these anxiety-provoking stimuli (Omdal, 2008).

Parental involvements in SM intervention are typically found in family and group therapy (e.g., Sharkey, McNicholas, Barry, Begley, & Ahem, 2008; Wood, Piacentini, Southam-Gerow, Chu, & Sigman, 2006). These studies focus on the relationship between SM and family dynamics (parent-child relationship) to explore whether adjusting the parenting style could lead to successful SM interventions. These interventions typically involved educating parents on SM and anxiety disorder, as well as providing them with counselling and coaching sessions in order to eliminate the child's dependency (e.g., stop speaking for their child) on their parents while fostering a child's speech. While most SM interventions are facilitated by clinicians and or researchers (Kratochwill, 2014), this study involves parents to facilitate all VSM and stimulus fading (SF) sessions for three reasons: (a) The primary goal is to increase the child's self-efficacy in her ability to speak to the teacher and to become desensitized to the anxiety associated with speaking to the teacher, not the researcher; (b) As the intervention sessions require the child to engage in anxiety provoking tasks, it seems unreasonable to leave the child with a "stranger," given that it would be difficult to build rapport between the child and the researcher with the time constraints; and (c) It is important to involve the parent in the intervention as he or she could gain first person experience with the augmented VSM technique, and can provide valuable perspective during the second (qualitative) phase of the study. Consequently, this study takes place inside the schools with direct involvement of parents and classroom teachers. Details of the intervention procedure are provided in chapter 3.

Chapter Summary

This chapter provides an overview of SM including its characteristics, epidemiology, etiology, and its effects on a person's well-being if left untreated. The

existing conceptualization of SM such as the psychological, biological, behavioural, and multifaceted mechanisms were presented to reflect the diverse intervention modalities. The focus was placed on behavourism and its behavioural approaches since it is more established, considered nonintrusive, and has empirical support (McHolm et al., 2005; Pionek Stone et al., 2002).

This discussion of social learning theory linked to self-efficacy and the self-modeling approach (Bandura, 1994). According to Bandura, self-efficacy is an individual's belief in the ability to succeed in certain situations. A higher belief in success can lead to higher success rates. He also postulates that the best models are those most similar to the viewers. This concept evolved to the development of video self-modeling (VSM) in which individuals observe themselves performing exemplar behaviour on the video and imitate it. In accordance to this, VSM has been further explored and developed, and was successfully used for conditions such as attention disorder, autism, stuttering, and SM.

Kehle et al. (1998) conducted a study using augmented VSM (combined with stimulus fading, self-reinforcement, and mystery motivator) on three children with SM. Unlike many behavioural interventions that are time consuming, Kehle et al. demonstrated that augmented VSM is an effective technique in which that one participant's speech occurred immediately after the onset of treatment.

This mixed methods study built on Kehle et al.’s study and further explored the effectiveness of the augmented VSM technique for SM. The first (quantitative) phase was informed by the methods and findings of Kehle et al. The second (qualitative) phase explored the participants’ (three children with SM) and stakeholders’ (parents and

teachers) experiences to gain their insights of the intervention. By deeply exploring the experiences, contexts, and perceptions of the participants and stakeholders as well the implications and effects of augmented VSM, greater insight and understanding of the real-world effects of augmented VSM will be realized.

CHAPTER THREE: RESEARCH METHODOLOGY AND DESIGN

This chapter delineates the research design and methodological orientation for the present investigation. Three children with selective mutism (SM) along with their parents and classroom teachers (N=7) were invited to participate the study. An explanatory sequential mixed-method was used to explore both quantitative and qualitative components of the study. More specifically, this chapter discusses the rational for adopting a mixed methods explanatory sequential approach, participant recruitment and selection, settings, research instruments and procedure, data collection and analysis, as well as ethical considerations.

Research Questions

The present study evaluated the efficacy of augmented VSM as an intervention technique for SM by addressing two research questions: (1) Is augmented VSM an effective strategy in resolving the mute behaviour of three young children with SM? In order words, after intervention, will these children engage in more verbal communications across all settings (i.e., home, school, and community), and will the speaking behaviour be maintained at the 1-month follow-up? (2) What are the perceptions and experiences of teachers, parents, and children regarding the augmented VSM technique? This question focused on three areas: (a) What perceptions of the effectiveness of the strategy do the stakeholders narrate? (b) How do the participants and stakeholders experience the augmented VSM intervention? and (c) How do the stakeholders describe their expectation for and the impact of the strategy?

A mixed methods approach involving two data collection stages were used to address the research questions. The first, quantitative (QUAN) stage was to measure the

effectiveness of augmented VSM, while the second, qualitative (QUAL) stage explored the experience and impact of the intervention through participants' perspective. Hence, this mixed methods study followed the explanatory sequential design in which QUAN data collection was followed by a QUAL phase.

Mixed Methods

A mixed methods research design is a procedure for conducting, collecting, and analyzing a study (or a series of studies) using both QUAN and QUAL methods to thoroughly understand a research problem (Creswell, 2012, Creswell & Plano Clark, 2011). The basic assumption is that a better understanding of the research problem is yielded when combining both QUAN and QUAL methods than either method by itself (Creswell, 2012). Quantitative data, such as scores from assessment instruments, yield specific scores that can be statistically analyzed to produce useful information to describe frequency and magnitude of trends. Qualitative data, such as open-ended interviews, yield descriptive data (actual words) of participants and offer perspectives on the research subject.

Rationale for Explanatory Sequential Design

An explanatory sequential design is the “most popular form of mixed methods design in educational research” (Creswell, 2012, p. 542). Unlike concurrent mixed methods strategies where both quantitative and qualitative data are collected at the same time, the central feature of explanatory sequential design places a priority on QUAN component where QUAN data is collected and analyzed first in the sequence. Then, a QUAL component was added in the end to further examine the results.

This approach was selected for the present study as QUAN data and results helped informed whether augmented VSM was an effective intervention technique in

increasing verbal communications of child participants, and the additional collection of QUAL data helped provide an understanding of how the experimental intervention work through the perspective of the participants.

Single-subject, baseline-intervention with an A/B design. In order to explore the effectiveness of augmented VSM as an intervention technique for SM. The QUAN phase employed the single-subject, baseline-intervention with an A/B design. Single-subject is an experimental design that involves the study of a single individual's (single-subject, N=1) targeted behaviour (dependent variable) in relation with the independent variable such as intervention.

In this A/B design, a baseline evaluation of an individual's target behaviour (A) is made prior to administering an intervention. Then, another evaluation (B) is conducted during post intervention to determine whether the intervention had any effect on the individual's target behaviour (i.e., verbal activity in this study). A/B design is often the most practical within the school settings, especially when addressing low incidence behaviours such as SM (Kehle et al., 1998; O'Reilly et al., 2008).

In order for inferences to be drawn, the data collected during post-intervention must demonstrate a change in the dependent variable (targeted behaviour) was caused by the intervention (independent variable). Hence, in order to demonstrate a causal relation between the intervention and the change of an individual's target behaviour, evaluations of the target behaviour occurred during baseline was conducted frequently and consistently throughout all study phases (Nock, Michel, & Photos, 2008).

Participants

Upon research ethics clearance from Brock University (File # 13-126 - BENNETT) and a local school board, the board's Speech and Language pathologist (SLP) forwarded a copy of the invitation letter describing the study to the classroom teachers (CTs) who were known to have students with SM to seek verbal consent. The rationale behind recruiting CTs first, was to avoid the disappointment of the parents should they learn that their child was not eligible for the study because the CT declined to participate. For the CTs who were willing to participant in the study, a formal invitation letter explaining the study and participation requirement was sent to parents via the SLP.

Participant Screening and Consent

An initial screening was conducted over the phone with the parents of the potential participants who had children aged eight and under. For those who met the study criteria—formally diagnosed by a paediatrician with SM and not receiving intervention or treatment—a formal meeting was set up at a location chosen by the parents. The researcher went over the study details and procedure, timelines, as well as the roles and responsibilities of each stakeholder. Prior to signing the consent form, parents were informed of the potential risk and benefit of participating in the study, and their right to withdraw from the study at any point without any consequences. Parents were also instructed to obtain their child's assent prior to administering the VSM sessions.

Following this, classroom teachers (CTs) were formally invited to the study. They were also informed of their right to withdraw from the study as well as the potential risk and benefit associated with participating in this study.

Participants

The participants of this study were three eight-year-old, third grade female students Ava, Bella, and Cate (pseudonyms). The stakeholders consisted of their mothers and CTs. Based on background information provided by parents, Ava and Bella are Eurasian fraternal twins while Cate is Caucasian. The twins were enrolled in the same classroom while Cate was from a different school. All three children were diagnosed by their paediatricians with SM prior to the study. In fact, Cate was 2.5 years old when she depicted SM behaviour while the twins were 3.5. All three participants were not diagnosed with SM until aged six, which is 2.5 to 4 years later. This is consistent with empirical research indicating that many children are not diagnosed nor provided with appropriate intervention promptly due to a lack of awareness of SM (Omdal, 2007; Schwartz et al., 2006; Standart & Le Couteur, 2003). Table 1 describes the characteristics of participants in the quantitative phase.

Setting

Because SM predominately occurred inside the classroom with the three participants, most of the intervention sessions (video self-modeling and stimulus fading) took place inside each of the participant's classrooms. The researcher met with the parents and CTs weekly inside the school, although some meetings were conducted after school hours and took place at a home or local coffee shop as requested by the parents.

Materials

Specific materials were utilized within the research procedures. Firstly, a copy of the Intervention Manual was provided to the parent with the contents of: (a) an overview of SM; (b) an overview of augmented VSM; (c) an overview of the intervention program; (d) specific procedure to follow and the role and responsibility of the participant; and (e)

daily observation sheets. Additionally, each participant's parent was also provided with a USB key that contained an edited video recording to be used for the VSM session. Parents and CTs were also supplied with a folder that contained enough copies of assessment materials for the entire duration of the study.

Three mystery gifts (e.g., video games) were placed inside a manila envelope inside the CTs' locked drawers inside the classrooms. The researcher also supplied 20 small wrapped gifts (e.g., markers, erasers, small toys, etc.) for each child per week to be used as reinforcers during intervention sessions.

Instruments

Quantitative and qualitative data were collected throughout the present study. Background questionnaires were conducted prior to the intervention. Selective Mutism and School Speech Questionnaires, and direct observations conducted by the stakeholders and researcher yielded meaningful QUAN data, while interviews upon post-intervention concluded the QUAL component of the study.

Background Questionnaires

Upon signing the consent forms, the researcher obtained each child's background information from parents and CTs (see Appendices B and C). These background questionnaires with open- and close-ended questions were designed to obtain each participant's specific verbal/non-verbal and other problematic behaviours as well as background information prior to the study.

Background Information (BI) questionnaire conducted with parents yields the child's information such as family history, people the child spoke to before the intervention, age of onset, treatment history, comorbid disorder/behaviour, academic and social functioning, and school experiences from parents' perspective.

School Information (SI) questionnaire administered to CTs, on the other hand, provided the child's verbal and nonverbal behaviours, other problematic behaviours (e.g., withdrawn, fear of going to the bathroom alone), academic and social functioning, and school experiences from the CT's perspective.

This information was collected to explore whether participants' backgrounds were consistent to empirical research which demonstrated that: (a) There is a higher rate of SM in children from multilingual families (see Elizur & Perednik, 2003; Toppelberg et al., 2005); (b) SM is an anxiety disorder that is based on genetic roots (Sharkey & McNicholas, 2006); (c) Because many primary health care professionals are not familiar with SM, there is a delay in diagnosis and often improper treatment is suggested (Schwartz et al., 2006); (d) There is a high rate of comorbidity with other disorders such as separation anxiety disorder and simple phobia (Kristensen, 2000; Manassis et al., 2003; Schwartz et al., 2006); and (e) SM can negatively impact a child's academic and social function (Schwartz et al., 2006). Finally, each participant's verbal behaviour in specific contexts across all settings were explored to compare with those obtained post-intervention to assess the effectiveness of the augmented VSM intervention.

Quantitative Phase

Frequent and ongoing assessment is an essential component in this study and involved all stakeholders, child participants, and the researcher. The following assessments were conducted as an initial baseline measure, and repeated during the intervention, post-intervention, and follow-up phase of the study.

Selective mutism questionnaire. Selective Mutism Questionnaire (SMQ; Bergman et al., 2008) is a "psychometrically sound measure of the core feature of

selective mutism" (p. 463). The 17-item parent report measures SM behaviours across three domains: school, home/family, and social settings. Parents rate the child's verbal behaviours and difficulties associated with an absence of speech in each settings using four possible responses (Never = 0, Seldom = 1, Often = 2, Always = 3). These scores can be added and averaged to obtain a mean for each setting and across all settings. Parents can also report the child's speaking behaviour from never/not at all to always/extremely in each setting. Thus, a lower score indicates higher SM severity and impairment.

SMQ has demonstrated significant correlations and a satisfactory internal consistency in several SM investigative reports with Cronbach's $\alpha = .842$ (Bergman, Keller, Wood, Piacentini, & McCracken, 2001) and .83 (Cohan et al., 2008). Several SM studies (e.g., Bar-Haim et al., 2004; Manassis et al., 2007) used SMQ as the primary instrument at each assessment point to measure treatment related changes with SM symptoms. In this study, SMQ was used as a baseline measure, as well as post-intervention and each of the follow-up phases.

School speech questionnaire. The School Speech Questionnaire (SSQ; Bergman et al., 2001) is a teacher-report that measures a child's speaking behaviours at school. There are six items that reflect a child's speech frequency with four possible responses (Never = 0, Seldom = 1, Often = 2, Always = 3). Like SMQ, these scores can be tallied for comparing scores between assessment points to reflect verbal improvements. SSQ has also demonstrated an acceptable internal consistency with Cronbach's $\alpha = .76$ (Bergman, Gonzalez, Piacentini, & Keller, 2013) and is useful in evaluating treatment-related teacher ratings of symptom improvement (Oerback, Johansen, Lundahl, & Kristensen,

2012). In the current study, SSQ was used as a baseline measure, as well as post-intervention, and during the follow-up phases.

Direct observations. Parents, CTs, and the researcher conducted observations in order to collect data on each child's communicative behaviour in natural settings; contexts that included the child's home, school, and classroom, and public spaces. These observations also occurred during the baseline measure, intervention, and post-intervention phases of the study.

The Parent's Daily Rating of Child Behaviour (DRCB; Appendix H) and teacher's Daily Rating of Student Behaviour (DRSB; Appendix I) observations monitor speech fluctuation and whether a child was making progress (i.e., frequency and volume of speech). The 0-10 audible scale is also useful for charting a child's daily progress. The DRCB also recorded the number of words spoken, whispered, mouthed in public, on the phone, at home, and to whom the child engaged this behaviour with. It also records the child's new verbal behaviour (e.g., when the child starts to speak with someone she does not normally speak to).

Similarly, teachers' daily rating recorded whether the child mouthed, whispered, or spoke in the classroom, during recess, at lunch; and to whom the child engaged the communicative behaviour with.

The researcher conducted two 30-minute in class direct observations for each participant during baseline, post-intervention, and the follow-up phases. These direct observations with a detached perspective strive to be as unobtrusive as possible. The goal was to observe rather than to become immersed in the context (Creswell, 2012). While there is no formal observation rating systems designed for children with SM, Kearney

and Vecchio (2006) suggested paying special attention to some specifics which may yield communicative pattern changes. These include: (a) number of words spoken; (b) speech volume (audible/inaudible); (c) to whom the communication occurred; (d) anxiety level (evidence of escape, withdrawal, avoidance); and (e) response to verbal approaches (e.g., speaking, nodding, pointing, crying). As such, the observations were informed by Kearney and Vecchio's, and a check list was created which incorporated numeric and rating scales (e.g., numerical values such as 0, 1, 2, and 3 were used to reflect the speech volume of "mute," "audible-soft," "audible," "audible-loud").

Qualitative Phase

In accordance with explanatory sequential design, QUAL assessments were conducted upon conclusion of the QUAN phase. Assessments conducted include stakeholder (i.e., parent and teacher) interviews with open-ended questions as well as participant interview with both open- and close- ended questions.

Interviews. Interviews were conducted with each stakeholder (parents and teachers) as well as the participants upon conclusion of the QUAN phase, to explore their perspective and experience of augmented VSM technique. Parent interviews (Appendix F) consisted of 14 open-ended questions such as "Do you view augmented VSM as an effective protocol for SM, why?"; "What has the impact of this intervention been? For example, have you noticed a change?"; "Has the result from the intervention met your expectation?" et cetera. Teacher interviews were the same as parent interviews with two additional questions. Research findings indicate that children with SM often "present a puzzling behaviour problem to teacher" (Kauffman, 2005, p. 378) because of the lack of SM awareness. Therefore, this study explored what the CT had learned from this

intervention. These additional questions were “What specific strategies or information have you learned/gained from this intervention?” and “Would these specific strategies or knowledge be transferred to assist other students who need accommodation (e.g., children with other types of conditions/disorders)? Please explain.”

While all children were able to speak to me upon the conclusion of the study, I designed a questionnaire that aimed to explore their experience (not perspective) of the intervention. Given the fact that all participants were eight years old, they may not have had the cognitive maturity to share their feelings and perspective with others (Cohan et al., 2006). The two-page, 13-item questionnaire that was used is filled with emoticons that depicted emotions such as “scared,” “nervous,” “happy,” and “no feeling” alongside the texts. There were also thumb-up and thumb-down icons for yes and no questions in the case that the child was unable to communicate. One open-ended question; “Could you tell me why you didn’t talk before?” was asked to explore why the child could not speak prior to the intervention (see Appendix G). This question was asked after the child was comfortable speaking to me and making eye contact and I cautiously prepared to “rescue” the child by saying “you don’t know why?” in case the child failed to answer.

Research Procedure

This mixed methods explanatory sequential study involved two phases. The (first) QUAN phase consisted of the augmented VSM intervention, and the (second) QUAL phase consisted of interviews with the participants and stakeholders. The following describes the research procedure, data collection and analysis for each of the QUAN and QUAL phases of the study.

QUAN Study Procedure

The following research question guided the QUAN portion of the study: Is augmented VSM an effective strategy in resolving the mute behaviour of young children with SM? After intervention, will these children engage in more verbal communications across all settings (i.e., home, school, and community), and will the speaking behaviour be maintained at the 1-month follow-up?

In order to examine the efficacy of augmented VSM, the SM intervention for all three participants occurred within the QUAN phase of the study. Data collection and analysis were conducted and were repeated frequently throughout the intervention. This QUAN component consisted of five phases: pre-intervention, baseline, intervention, post-intervention, and the 1-month follow-up.

Pre-intervention phase. All preparations for the study were conducted during the pre-intervention phase. This included: (a) explaining the study in detail and obtaining written consent from all stakeholders; (b) coordinating, filming, and editing the video-footages for the VSM sessions; (c) coordinating and scheduling the VSM and stimulus fading (SF) sessions; (d) identifying and planning a series of appropriate activities for each child's SF session in order to achieve the successive approximation of the targeted speech; (e) purchasing and wrapping the small reinforcers and mystery gifts; and (f) providing parents and CTs with enough copies of the instruments for the study.

Consultations. Prior to obtaining the written consent to participate in the study, the researcher met with the parents and CTs and provided consultations to clarify the specifics of the intervention as well as each stakeholders' roles and responsibilities. Parents were also provided with the Intervention Manual which contained an overview of SM and augmented VSM techniques. This manual also included details such as: (a) what

is involved in each phase of the study; (b) what kind of assessments and instruments are used throughout the study; (c) the frequency of VSM and SF sessions; (d) the maximum number of intervention sessions and maximum time commitment of each stakeholder; (e) a script of assent to read to their child prior to the intervention; (f) how to handle situations where the child reacts adversely to the intervention sessions; and (g) weekly meetings and data collection procedures.

The researcher also explained to the stakeholders that their involvement in the study was voluntary and that they had the right to withdraw from the study at any point without penalty. Parents were also informed that all information gathered from the study would be kept confidential. As such, all identifying information was not reported and only the researcher and the PhD supervisor had access to the data. Contact information from the researcher, her supervisor, and the Research Ethics Board was also provided to the staekholders.

Once consent forms were signed, the researcher obtained each child's background information from parents and CTs (see Appendices B and C). The researcher then asked each parent to compile a list of small tangible items to be used as reinforcers, and a larger gift item that served as the “mystery” motivator. The small reinforcers were individually wrapped in colourful wrapping paper while the larger gifts were placed inside a sealed manila envelope. The child’s name and a question mark was displayed on the outside of each envelope and placed in the CT’s locked desk. The child was informed that inside the envelope was a surprise gift, and if she asked for it in an audible tone voice, she would be rewarded the gift. Finally, a small picture of the envelope was taped on the child’s desk to serve as a reminder of the gift. According to Kehle et al. (1998), this hidden reward

increases "the anticipation and value of the reinforcer" (p. 248). The researcher also instructed parents to compile a list of 10 questions for the video-recordings procedure. The video recording, the VSM sessions, and most of the SF sessions occurred within each child's classroom.

Video footage preparation. Video recording took place inside the classroom before school hours because children with SM are more likely to speak when not being observed or heard speaking. The classroom door was closed, and the child had her back facing the closed door to gain a sense of privacy. The camera was securely placed to capture the child sitting across from her parent. Two video recording sessions were conducted for each child in order to produce a footage that depicted the child speaking to the CT when in fact, she was speaking to her parent. The procedure for preparing the edited footage was three-fold. First, inside the child's empty classroom, the parent was video-recorded asking her child 10 questions that required verbal answers (e.g., what is your favourite toy?), and the child was answering the questions in a normal voice tone (this took some prodding for all three children). Then, without moving the camera, the CT was video-recorded alone inside that same classroom. She was seated where the parent was seated (directly across from where the child was seated), and was video-recorded asking the same 10 questions that were posted by the parent. Finally, these two recordings were merged and edited to depict the child supposedly answering the CT questions instead of the parent's.

Baseline phase. Data collection was conducted on each child to explore their verbal behaviour prior to the intervention, which comprised the entire baseline phase. The researcher provided each parent and CT a folder with sufficient copies of the observation

instruments for all intervention phases (see Appendices L and O). Data collected include parents' reports of the child's background (BI) and Selective Mutism Questionnaire (SMQ) as well as teachers' reports of the child (SI) and the School Speech Questionnaire (SSQ).

Teachers and parents also began recording their daily observations of the child at school, at home, and in public using the Parent Daily Ratings of Child Behaviour (DRCB) and Teacher Daily Rating of Student Behaviour (DRSB) forms. These daily observations were conducted throughout the entire study, which spanned from baseline to follow-up phases.

In addition to these, the researcher visited each child's school and spent two 30-minute sessions observing and recording her verbal behaviour inside the classroom. These 30-minute time slots were selected with the assistance of CTs, and were conducted during class and break to explore speech patterns that occurred within both formal and informal contexts.

Intervention phase. Upon baseline measure, video self-modeling (VSM, viewing of the edited video) sessions were scheduled to be implemented inside an empty classroom before the start of school twice a week—with a minimum of one day in between—to produce the spacing effect. However, due to circumstances, not all VSM sessions conducted adhered to the original schedule (details in chapter 4). The researcher was discretely present for all sessions to provide support as needed. The child's parent administered the viewing sessions, and recorded the child's reaction in the Observation Form for Video Self-Modeling Sessions (see Appendix J). A basket of the wrapped small reinforcers (small toys, candies. stickers, etc.) was placed next to the child.

Prior to each VSM session, the parent was instructed to read a script to her child indicating that the child could quit the session at any time. Then, the child was instructed to push the pause button upon viewing herself verbally responding to the teacher's questions as depicted by the edited recording. With each pause, the child was allowed to select a reinforcer inside the basket. After each VSM session, the child was reminded of a mystery gift that was placed inside the CT's locked drawer. If the child was able to ask the teacher for it in front of her parent and classmates, she would receive the gift. A small picture of the manila envelope that contained the mystery gift was glued on the child's desk to serve as a reminder, and the teacher was instructed to tap on that picture when the child was "having a good day" and was more engaging during class time. Table 2 shows the time frame and planning of the VSM sessions.

Stimulus fading (SF) sessions were implemented after the second VSM session. Parents, grandparents, siblings, or anyone the child spoke to at home were invited to come into the emptied classroom (after school) and play a verbal game (e.g., guess who) with the child. When it was established that the child was comfortably playing and speaking with the family members, the CT casually walked by and was invited to join in by the parent. As instructed, the CT did not sit directly across from the child to avoid eye contact. The CT was also instructed not to ask direct questions to avoid pressuring the child to speak. Hence, the CT made commentary statements (with no expectation of speech such as "I wonder...") until the child was conversing freely to parents and voluntarily responding to the CT's commentary statements. Parents recorded the child's reaction in the Observation Form for Stimulus Sessions (Appendix K) while the researcher observed discretely outside the classroom. The planning of SF sessions is

shown in Table 3. During the entire intervention phase, teachers and parents continued to observe and record the child's verbal behaviour using the DRCB and DRSB form (see Appendices H and I). Teachers recorded the observation information only during weekdays while parents recorded the information seven days a week. The researcher met with each parent and CT on a weekly basis, observed the SF sessions, gathered the forms, discussed any concerns with them, and suggested the following week's activity for the SF session. She also kept in contact with all stakeholders via email throughout the study.

Data collection. Along with the DRCB and DRSB observations conducted by parents and CTs, parents also recorded the child's reaction during each VSM and SF session using Parent's Rating for Video Self-Modeling Sessions and Parent's Rating for Stimulus Fading Sessions forms (see Appendices M and N). These measurements were designed to provide the researcher with insights as to how each child reacted to each intervention session, which in turn, was helpful in determining whether the activities carried out were appropriate for the child. Since the goal was to progressively engage the child with more verbocentric tasks, the observational form obtained from VSM and SF sessions help the researcher gauge and plan activities for the subsequent sessions.

Post-intervention phase. The intervention phase was to be terminated after eight weeks of 16 VSM and 15 SF sessions, and sooner if the child had reached her targeted behaviour and successfully obtained the mystery gift.

Data collection. The post-intervention data collection was conducted 1 week after the termination of the intervention. In order to obtain information pertaining to the effectiveness of the intervention, numerous measures conducted during the baseline were re-administered. These included SMQ, SSQ, DRCB, DRSB, and the researcher's two 30-

minute in class observations (same settings as pre-intervention phase). The researcher also interviewed all child participants, parents, and CTs to explore their experiences and or perspectives of using the augmented VSM technique to address SM.

Follow-up phase. The goal for the 1-month follow-up was to assess whether the child's post-intervention behaviour was maintained after withdrawal of the intervention. As such, SMQ, SSQ, DRCB, DRSB, and two 30-minutes of in-class observations were repeated for each child. Table 4 summarizes all data collection conducted throughout the study.

Data analysis. Consistent with most single-subject baseline design interventions that involves a small sample size, statistical analyses was not conducted. Instead, data obtained from parent and CT ratings of SM (SMQ and SSQ) were manually computed (added, averaged etc.) and presented in tables then plotted in graphs to enable visual inspection of the slopes of the lines. The same procedure was conducted on data collected during baseline, post-intervention, and the one-month follow-ups, to allow for comparisons to be made on each child's verbal score from all settings (at school, at home, in social settings). Similarly, the researcher's classroom observations that yielded numerical results were organized in the same manner.

***Visual analysis*.** Visual analysis is a process for reaching a conclusion about reliable intervention effects by visually examining the graphed data (Kazdin, 1982). While visual analysis was the only method for data analysis historically, it remains the most frequently used method for single-subject design (Busk & Marascuilo, 1992). According to Parsonson and Baer (1992), visual analysis is the original form of data analysis for all research design and continues to be considered a viable method for

analyzing single-subject data, as it yields low error rates (Huitema, 1986). Through ongoing data collection and plotting of the graphs, visual analysis allows researchers to examine mean shifts, level, trend, and slope to make decision and to draw a conclusion on a given topic. For instance, the trend is determined by observing if the slope of the data accelerates, decelerates, and or remains constant within a phase (Tawney & Gast, 1984) and helps the researchers to reach a judgement about intervention effects (Kazdin, 1982).

QUAL Study Procedure

A qualitative (QUAL) component made up the second phase of this mixed methods explanatory sequential study, to supplement the findings from the QUAN phase. The goal for conducting the QUAL component was twofold: (a) to better understand and describe the QUAN results produced from the first phase; and (b) to gain a deeper understanding on the effectiveness of the augmented VSM from the stakeholder's perspective. The second research question explored the perceptions and experiences of the stakeholders, guided the QUAL portion of the study. This question focuses specifically on:

1. What perceptions of the effectiveness of the strategy do the stakeholders narrate?
2. How do the participants and stakeholders experience the augmented VSM intervention? and
3. How do the stakeholders describe the expectation for and the impact of the strategy?

Data collection. Interviews were conducted upon conclusion of the QUAN study. The participants and stakeholders were reminded of their right to refuse to answer any questions that they felt uncomfortable with, as well as their right to withdraw from the

study at any point. While everyone agreed to continue with the process, both CTs requested to obtain the interview questions in written form and provided written answers later on due to their busy schedules. The researcher conducted one-on-one interviews with parents and the child participants at a location that best suited each individual. Each interview took approximately 10 to 30 minutes.

Child participant interviews consisted predominantly close-ended questions along with two open-ended ones (see Appendix G). Questions with a *Yes/No* answer allowed them to agree or disagree with certain topics (e.g., “Do you like viewing the movie of yourself talking to Ms....?”; “Do you think the movie helped you speak to ....?”; “Do you think it was a good idea to make the movie?”). Questions that were designed to explore the child's feeling/emotion (e.g., “When you watch the movie in the classroom, you feel...”) were presented with four options for the child to choose (i.e., “happy,” “nervous,” “scared,” “I feel nothing”). Emoticons were used for each emotion alongside the text to assist the child to respond. Two open-ended questions were included to explore more in-depth knowledge of the participants. One question asked what the participant liked best (or did not like) about watching the movie, while the other asked the participant why she did not speak prior to the study.

Adult interviews were guided by open-ended questions (see Appendix F) in order to entice open-ended responses that allowed the adults to have better control over the type of information they wished to share. Questions involving the word *why* asked the stakeholders to describe their feelings and opinions in their own words (e.g., “What are the specifics that you liked/disliked about the entire study? And why?”; “Do you think augmented VSM is a non-intrusive technique for SM, why?”). Questions with words such

as *specify/explain* provided the stakeholders an opportunity to share specific knowledge of the intervention (e.g., “Did you have any concerns/questions/issues in regards to using the augmented VSM approach for SM throughout the entire intervention? Please specify”; “What are the specifics that you liked/disliked about the entire study? Please explain”; “Is there any aspect(s) you feel could have been done differently? Please explain”).

In order to understand and to extend findings from the QUAN study, specific questions pertaining the intervention efficacy were also presented (e.g., “Do you view augmented VSM as an effective protocol for SM, why?”; “Has the result from the intervention meet your expectation?”; “What has the impact of this intervention been? For example, have you noticed a positive change?”).

Data analysis. Data analysis was conducted based on qualitative research traditions by employing hand analysis given the small data size (Creswell, 2012; Creswell & Plano Clark, 2011). Hand analysis involved the researcher reading and rereading the QUAL data to get a general sense of the information. First, data were coded at the individual level (each interview). Notes were written in the margins of each document, key sections of the text and reoccurring words and phrases were high-lighted. This process was repeated until all data from all interviews were coded. Redundant or overlapping codes were eliminated while re-occurring information were organized as themes in the code book.

Ethical Considerations

This study followed Tri-Council Policy Statement conventions for ethical research. A research proposal including letters of invitation, consent forms as well as a

paediatrician's supporting letter were sent to the Brock University's Research Ethics Board (REB) for approval. Upon obtaining the research clearance from Brock REB, a research proposal including invitation letters and consent forms were sent to a local school board for permission to conduct the study.

All participants were presented with a letter of invitation, which explicitly outlined the potential benefit and risk, time commitment, voluntary nature, and the respect for confidentiality for the study. This information was reiterated in the consent forms to ensure all parties understand their rights for participating in this respectful research.

Chapter Summary

This chapter describes the methodological orientation and study procedure used to evaluate the effectiveness of the augmented VSM while gaining an understanding of the child, teacher, and parent's perspective on the intervention. The description of the participant, setting, instruments, as well as data collection and analysis for QUAN and QUAL phases are presented. Because this explanatory sequential research aimed to explore the effectiveness of augmented VSM as an intervention technique for SM, a detailed description of the study procedure including facilitation of the augmented VSM intervention was also provided.

CHAPTER FOUR: RESULTS

This mixed methods study examined the efficacy of augmented VSM as an intervention technique for SM. In accordance with explanatory sequential research, QUAN data collection was conducted first, which was followed by a QUAL data collection. The following research questions guided the investigation:

1. Is augmented VSM an effective strategy in resolving the mute behaviour of young children with SM? After intervention, will these children engage in more verbal communications across all settings (i.e., home, school, and community), and will the speaking behaviour be maintained at the 1-month follow-up?
2. What are the perceptions and experiences of teachers, parents, and children regarding the use of the augmented VSM technique? This question focuses on three areas: (a) What perceptions of the effectiveness of the strategy do the stakeholders narrate? (b) How do the participants and stakeholders experience the augmented VSM intervention? and (c) How do the stakeholders describe their expectation for and the impact of the strategy?

In order to determine the efficacy of augmented VSM for SM (i.e., research question 1), the QUAN phase comprised of SM intervention with three participants using the single-subject, baseline-intervention method with an A/B design. A QUAL phase was conducted afterwards to explore the perceptions and experiences of the participants and stakeholders regarding the augmented VSM technique (i.e., research question 2). This chapter provides an overview of the participants, the intervention procedure, and the findings from both phases of the study.

Background of the Participants

Three participants with SM and four stakeholders (parents and CTs) took part in the present study. Upon signing the research consent form, parents provided their child's background information (Appendix D) while the teachers provided their students' information within the school context (Appendix E). The following presents three participants' background based on the information collected. For the purpose of this research, the participants are named Ava, Bella, and Cate.

Ava

Ava and her twin sister are Eurasian fraternal twins who are enrolled in the same grade 3 class. Consequently, they received the augmented VSM intervention at the same time. The mother disclosed that there was a family history of anxiety and depression, and she had anxiety issues of her own. The mother further reported that there were no abnormalities during and after the girls' birth, but both girls "suddenly stopped talking to adults" when they started junior kindergarten (at age 4). A paediatrician formally diagnosed the girls with SM in grade 1 (at age 6).

Mother described Ava as a happy, caring, and a loving child, although she also stated that Ava was stubborn, worrisome, and easily upset. The mother reported Ava often relied on her twin sister Bella to communicate for her. She also suffered from separation anxiety and the fear of heights. The mother explained that Ava often complained about stomach aches in anxiety-provoking situations or whenever being separated from her. CT added that Ava needed to go to the washroom frequently when anxious or nervous and needed to be accompanied by her sister as she was unable to go alone.

At the outset of the research, the mother reported that Ava only spoke with them and two other adults at home selectively. For example, the mother discussed how Ava would speak to her maternal grandmother and the babysitter, but would stop talking when others were present (including her own parents). Interestingly, Ava did not speak to her maternal grandfather or aunts despite seeing them frequently. The CT added that Ava was able to speak to her although in select contexts (e.g., she spoke freely during breaks but limited during class), but would not speak to her at all when the mother was present in the class.

According to the mother, Ava refused to take part in any extracurricular activities such as skating and swimming lessons. Mother further reported that since Ava's anxiety was noticeably more severe than her twin sister, she had been enrolled and received art therapy for over 6 months with no noticeable improvements. Ava consistently clinging to her mother's leg, crying out loud, and refusing to let go at the beginning of each school day. The mother felt that SM was having an impact on Ava socially and academically, and she worried that Ava would be "scarred by unempathetic people who do not understand her." Her hope for Ava was that she could reach her full potential.

Ava's CT agreed that Ava was "well below average" academically. However, she believed that Ava's social functioning was typical of peers her age. According to the CT, Ava seemed to be more stubborn, withdrawn, and appeared sad after the weekend and holiday breaks. The CT also confirmed that Ava would not go to the bathroom alone despite the frequent visits (i.e., 3 to 5 times, occasionally more than 10 times daily). The current CT was informed of Ava's SM by the previous CT, so there was an Individualized Education Plan (IEP) in place. An IEP is mandated by Ontario's Ministry

of Education, which outlines a student's exceptionality, his/her learning expectations, and how the school will address these expectations through appropriate instructional and assessment accommodation. According to the CT, Ava's IEP mainly ensured that she could do presentation privately instead of in front of the whole class. At baseline, Ava was able to speak normally to peers and CTs during recess and art lessons. However, Ava either spoke in a lower volume when prompted, or did not speak on academic related matters to the CT.

Bella

The mother reported that Bella did not exhibit other conditions or "problematic" behaviour other than selectively not speaking. Bella's SM also appeared to be less severe than her sister's, so she did not receive any art therapy prior to the consent of study. At baseline, Bella was able to speak to her grandmother and babysitter at home, and also spoke to those who were not "threatening" to her. The mother further shared that Bella had never spoken to her grandfather and aunts despite seeing them frequently. The mother described Bella as a caring, loving, and a happy child although also timid. She believed that SM was negatively impacting Bella's social development and academic functions. She hoped that awareness of SM would help the teacher teach with empathy and understanding. Since Bella tended to keep her anxiety well hidden, the mother hoped that Bella learned to cope with SM and given the opportunity to learn at her own pace and comfort in order to reach her full potential,.

The CT described that Bella's academic level was below average while her social functioning was typical with children her age. She further described Bella as a happy and well behaved student. While Bella spoke to all her friends and peers, she would only speak to the CT on a "need" basis but never in front of her mother. Bella often had to

accompany her sister to the school washroom because Ava refused to go alone. She loved art and anything that involved creativity. Bella was also accommodated with the same IEP as Ava's, in which presentation and assessments were to be conducted in a private setting.

Cate

Cate was an 8-year old Caucasian girl attending grade 3 in an elementary school. She had an older brother who did not have SM. According to the mother, Cate was caring, loving, happy, yet timid, and loved the outdoors. Besides SM, Cate was no different than an "average child" although she refused to use the bathroom at her grandparent's house.

The mother reported that Cate stopped talking when she started attending the YMCA daycare at 2.5 years of age. She was diagnosed with SM by a paediatrician almost four years later (age 6). There was no known family history of SM or other anxiety disorder although the mother remembered being shy and quiet as a child herself. At baseline, Cate spoke to immediate family members everywhere except at school. Cate's mother further reported that SM was negatively affecting Cate in all aspects of school. Her biggest worry about Cate was that she would never speak at school even though she wanted to.

The mother reported that Cate had previously received over 3 months of art therapy from a public-funded mental health agency. However, the mother stated that the therapy had not been helpful as the intervention "needs to happen in school where she does not talk." Cate also received one year of cognitive behaviour therapy inside the school where the Communication Disorder Assistant (CDA) worked with Cate for half an hour per week. Each time, Cate and one of her classmates whom she does not speak to,

met with the CDA in a private room inside the school. The goal for each session was to have Cate speak to that classmate so that eventually she would be speaking to all her classmates. The mother felt that although some progresses had been made, the gain was too slow and Cate still did not speak to anyone inside the classroom despite having spoken to most of them privately with the CDA. Cate's mother emphasized that her daughter very much wanted to speak to everyone, she just did not know how to do so.

At baseline, Cate spoke to three friends outside of the school. While she was unable to speak to any classmate inside the classroom, she was observed speaking to some peers on the playground during recess. Cate was able to whisper to the CT but only when prompted and only if no one was present.

While the mother felt that SM was negatively impacting all aspects of school, the CT reported that Cate possessed an above average academic ability; and her social functioning was typical with children her age. The CT also noted that Cate spoke to ten girls on the playground, as opposed to mom's perception of three. Cate was described as compliant, capable of finishing work on time, and enjoying school and her classmates. The current CT learned of Cate's mute behaviour from last year's CT, and continued to use the IEP that was already in place. The main accommodation in the IEP was to provide Cate with an emptied room for presentation and reading assessment proposes.

In sum, all participants have family history of anxiety disorder and/or shyness, which supports the genetic etiological component of SM. Although English was the participants' first language, the children were all being raised in multilingual families. This finding is consistent to empirical research demonstrating a higher rate of children from multilingual families with SM (see Elizur & Perednik, 2003; Toppelberg et al.,

2005). Also, the onset of SM for all participants in this study coincided with their first foray away from home and enrolment in pre-school or kindergarten settings (between the age of 2.5 and 4). Furthermore, the children's persistently mute behaviour was not diagnosed by paediatricians as SM until age 6, which was at least 2 years after onset. The fact that two out of three girls received inappropriate and ineffective SM intervention (art therapy) confirmed previous research that most health care professionals lack knowledge on how to provide resources and guidance in SM (Schwartz et al., 2006; Standart & Le Couteur, 2003).

Findings From Quantitative Phase

This section discusses the findings from the first (QUAN) phase of the study. A detailed discussion of the augmented VSM intervention procedure for each child is discussed first. Then, findings from the parent's report of Selective Mutism Questionnaire (SMQ), the CT's report of School Speech Questionnaire (SSQ), the researcher's classroom observation, as well as parent's (DRCB) and teacher's (DRSB) daily observations are presented.

Intervention Procedure for Each Child

Ava. Although Ava and her twin sister Bella were able to speak to the CT selectively (freely during breaks but rarely during instructional classes), they had never spoken to their CT in front of their mother. Hence, the target behaviour of the intervention was for the twins to speak to their CT in front of their mother. The twins would be rewarded the mystery gift upon asking the CT for it in front of their mother, and "graduate" from the intervention phase.

In total, Ava received 8.5 intervention sessions that included 1.5 video self-modeling (VSM) and seven stimulus fading (SF) sessions involving the CT. The

intervention began with VSM and was followed by SF on the second day. Among all SF sessions, five were conducted inside the classroom and the final two were conducted in the school hallway. While the initial plan was to conduct 16 VSM sessions plus 15 SF (one SF session only during the first week) sessions during an 8-week (maximum length) period, the lack of time from the parents coupled with scheduling issues with the CT, the typical twice per week sessions for both VSM and SF were reduced to once per week.

During the first VSM session, Ava was highly anxious and needed her mother to encourage her to keep on watching the video footage that depicted her speaking to the CT. Mother reported in the observation form (Appendix J) that the reinforcers (little wrapped gifts) were helpful in motivating Ava to move on to the next segment of the video. However, Ava made huge progress at the second VSM session the following week. She exhibited no trace of anxiety that the mother decided to end the session mid-way, and requested to conclude the VSM portion of the intervention.

The first SF session occurred between the first and second VSM sessions. Ava, her twin sister Bella, and their mother were playing the "Guess Who" board game after school inside an emptied classroom. When both girls were playing and talking freely (within 10 minutes), the researcher instructed the CT to go inside the classroom casually and joined in the activity. Mother reported in the observation form (Appendix K) that Ava stopped talking and was anxious as the CT approached them. However, she was able to loosen up gradually and spoke freely within 30 minutes after the CT joined in. Ava and her sister were able to ask the CT for the mystery gift in front of their mother. The researcher discussed with the stakeholders and asked whether they wished to conclude the intervention since the target behaviour—speaking to the CT in front of the mother—

was achieved. The group collectively decided that it was best to continue on the SF sessions in order to establish and generalize this new behaviour to other people and settings.

The same activity from the first SF session was repeated in the second session to help Ava maintain the new behaviour. Despite the fact that Ava stopped talking again when the CT joined in, she was soon able to speak freely to the CT, and the entire activity was concluded in 20 minutes.

Ava's progress indicated that she was responding to the intervention positively and was ready for more challenging tasks. Since reinforcement is found to be effective in SM interventions (Sloan, 2007), the researcher discussed with the CT the idea of a reward chart for each girl. The reward chart was simply a piece of paper with a blank table. A number of exemplar behaviours (e.g., "raise hands and speak during class," "line up before the school bell rings," etc.) were listed on the left column, and the rest of the columns were left blank so the CT could put a check mark once the child exhibited the exemplar behaviour. The same instruction was provided to the mother to help the girls generalize their speech within the community and at home. In accordance with this new activity, the next (third) SF was to discuss the reward chart, and involved Ava and her sister in deciding what items to be included on the left column.

During the third SF session, Ava, Bella, the mother, and the CT discussed what to put into the reward charts, and the girls were enthusiastically providing input. Ava and Bella were reminded that they would receive a check mark on their own reward chart if they displayed/executed a brave behaviour such as raising their hands, speaking out loud during class, ordering food in restaurants, et cetera. The girls were also told that whoever

received the most check marks would be the winner at the end of the day and rewarded with a little gift (the little reinforcers that were used for the VSM sessions).

The concept of using competition to foster and motivate verbal communication has been demonstrated to be useful for treating SM during play therapy (Jackson et al., 2005; Sloan, 2007). Evidently, Ava responded well to the competition. She made progress during class and was engaged in the SF session.

At the fourth SF session, Ava wanted to play the "Guess Who" board game that was played during the first and second SF session. This time, she continued to speak freely when the CT walked in. The mother reported that Ava exhibited no anxiousness when the CT joined in. This was encouraging progress in comparison to the first and second SF sessions playing the same game (i.e., anxiousness from level eight and dropped to zero, with 10 being the most anxious). A similar report was recorded in response to the statement that read "stopped talking when CT entered the room." The rating scale dropped from eight to zero (with 10=very true, and 0=not true) from the first two SF sessions. Considering the progress Ava was making, the next SF activity was planned to focus more on conversations to obtain further progress.

The fifth SF session focused more on conversations with a discussion of Ava and her sister's eighth birthday party plan. The mother reported that Ava was excited and enthusiastically talking about what to do for her birthday, but she became somewhat anxious (level 5) when the CT joined, and there was a decrease in talking (level 5). Her response was understandable, as this activity requires more articulation (full sentences) than the previous one (check mark items). Despite an apparent set back in comparison to

the third and fourth SF sessions, Ava was still coping relatively well when compared with session one and two.

According to Johnson and Wintgens (2001), there are three main factors that influence a SM child's speech: (1) people (e.g., adults are typically more anxiety provoking than children); (2) activity (e.g., playing games are easier than engaging in conversations); and (3) location (e.g., a child will be more likely to speak in a familiar environment such as home than in public). Since Ava was able to speak freely to the CT (factor 1) in front of her mother inside the classroom (factor 3), and she was most at ease while playing games (factor 2), the researcher suggested to change one of the factors (one stimulus)—the location—in order for Ava to continue making progress and to generalize her speech.

While changing or adding people (another stimulus) might have been a practical approach as well, with the time constraint (two weeks of intervention remaining), moving the SF session to outside of the classroom seemed like a logical approach as it would provide Ava an opportunity to generalize her speech to another location and to new people (e.g., someone who happened to walk by in the hallway).

Hence, the sixth SF session was conducted in the school hallway, just outside Ava's classroom. This time, Ava, her mother, and sister were throwing a ball to each other. The rule of the game was that everyone must say something (e.g., catch this) before throwing the ball to the next person. Not only was Ava engaging and spoke freely, the mother reported that her initial anxiety was lower than all previous SF sessions; she was not anxious at all when the CT joined the game, and she also did not stop talking .

The positive results from the sixth SF session indicated that Ava was ready for

more challenging (i.e., anxiety-provoking) tasks. While the session in the hallway enabled her to be seen and heard speaking freely by others, there was no opportunity for Ava to speak to other people. Hence, the primary goal for the seventh (final) SF session was to generalize Ava's speech to a maximum number of new people covering maximum area of the school. Upon discussion with the stakeholders, the final SF session was to be a traveling ball game: playing the same ball game as the previous session, but instead of staying outside of Ava's classroom, Ava would need to visit CTs and school personnel down the hall, say something, and throw the ball to them.

Session seven began in the hallway outside Ava's classroom before school started. The CT was present from the beginning alongside Ava's mother and sister. The researcher was standing nearby (less than 3 meters away) to observe, provide ad hoc guidance and support in case the activity was too anxiety provoking for Ava to follow through. Ava had no trouble playing the ball game while traveling down the hallway until the group reached another class, and that CT was invited out to the hallway to join in to play. Ava became very nervous and was unable to throw the ball to the male teacher despite being prompted and encouraged by all. The researcher then suggested the male teacher to turn around (with his back facing Ava) in order to eliminate any extra anxiety components resulting from eye contacts, and prompted Ava and her sister to shout out anything silly (instead of words) before throwing the ball. Ava remained very nervous but was smiling.

Ava's mother confided that in her opinion she could tell Ava wanted to throw the ball to the teacher but was scared. The mother also added that Ava enjoyed watching her

sister shout to that teacher and throwing the ball; and there were moments when she thought Ava could throw the ball to the teachers but then hide behind her sister instead.

As the school bell rang and the game was supposed to end. Ava suddenly found the courage to shout something quickly and throw the ball to that teacher. The group ignored the school bell and continued playing in order to establish Ava's new verbal behaviour. At that point, the male teacher was facing the girls, making eye contact, and speaking to them. Ava was very excited; her voice became clear within that minute as she become more confident in the game.

Bella. Bella's intervention schedule mirrored Ava's as she also received 1.5 VSM sessions and seven SF sessions. During the first VSM session, the mother recorded in the observation form that Bella was not anxious at all (anxiety scale=0) from the beginning. However, because Bella's sister was noticeably anxious and needed encouragement to continue watching the video footage, Bella continued on with the VSM until her sister was "graduated" from viewing it (see details above).

The first SF session involved Bella, her sister and mother playing the "Guess Who" game inside the emptied classroom. The mother recorded in the observation form that Bella was anxious (level=8) and stopped talking as the CT approached her, but she was able to speak freely (level=8) to the CT within 30 minutes.

In second SF session, mother reported that while Bella stopped talking (level=8) when the CT joined in the "Guess Who" game, she was able to speak freely within a few minutes and became not anxious at all (level=0).

The third SF session focused on discussing the reward charts that were set up for the girls. Bella and her sister were informed that they would receive a check mark from

the CT and mother each time they depicted a desired behaviour such as raising hands during class, speaking audibly, ordering food at restaurants, et cetera, and the one that received the most check marks would receive a reward at the end of the day. Bella and her sister were encouraged to suggest items to be included in the reward chart, and the kind of rewards for the winner. The mother reported that Bella became anxious (level=8) despite minimal speech interruption as the CT joined the discussion. This was the first time the mother witnessed Bella being more anxious than her twin sister (Bella was less anxious than her sister before the intervention).

In session 4, the girls re-played the "Guess Who" game as requested by Bella's sister. The mother reported that Bella was not anxious at all (level=0) when the CT joined, and she also did not stop talking. CT also reported that both Bella and her sister were progressing well with the reward charts. As such, the stakeholders and the researcher felt confident that both Bella and her sister were ready for more challenging (verbocentric) activity in the next SF session.

During the fifth session, Bella, her sister and mother were discussing the twin's eighth birthday plans. Bella became anxious (level=5) as the CT joined in the discussion, and she somewhat stopped talking (level=5). While this seemed like a set back from the previous session (level=0), it was in fact a progress when compared with session #3 (level=8) as it was also a verbocentric activity.

Session 6 was moved to the school hallway, just outside the classroom, to transfer the girls' speech to a new environment. Bella, her sister, and mother were shouting (e.g., catch this, watch out) and throwing a ball to one another. They continued to play and shout freely even when the CT joined. This positive progress indicated that the task was

perhaps not challenging enough as the mother reported a zero on Bella's anxiety level as the CT joined. As such, the goal for the final (seventh) SF session was to generalize speech to other school personnel and in different locations within the school.

During the last SF session, Bella, her sister, mother, and CT were shouting and playing the same ball game in the hallway outside their classroom before school began. Bella continued to engage in free play as the group traveled down the hallway and approached the adjacent classroom. When Bella's CT invited another teacher to join the activity, Bella became very anxious (level=10) and struggled to throw the ball to the male teacher. With the researcher's guidance, the male teacher turned around and faced his back to the girls. Bella found the courage; she yelled out something silly (non-word) and threw the ball to that teacher's back while giggling. Bella tried again, she yelled out words (watch out!) and threw the ball again to the teacher while her sister was hiding behind her (who was also smiling and seemed to enjoy watching). After 2 minutes, Bella continued playing, shouting and laughing despite the male teacher who was now turned around and facing her. When the school bell rang, Bella's twin sister started joining in and both girls were eagerly waiting for their turn to play.

Cate. Cate's first VSM session was scheduled on a Monday before school started inside the emptied classroom. The mother reported that over the weekend Cate was extremely anxious and was crying with the thought of watching the video footage. Cate felt more comfortable after her mother repeatedly reassured her that she had full control of when to stop watching the video.

During the first VSM session, the mother reported in the observation form that Cate was anxious (level=7) when viewing the first two segments, but the reinforcer (the

little wrapped gifts) was helpful in motivating her to continue watching. Cate became less anxious as the session progressed, her anxiety level dropped to level two at the last video segment.

Cate was visibly relieved and pleased with her own progress. According to the mother, Cate was very eager to start speaking freely with all her friends and was motivated to try more intervention strategies. With such feedback, the researcher discussed with Cate's mother and the CT, and suggested to make a video recording as the next classroom activity, and to use the intervention footage as a sample to show to the entire class. Since Cate's classmates have never seen her speaking to the CT, the first goal was to allow the entire class to view the video footage to break Cate's "silent identity" (Omdal, 2008, p. 312). The second goal was to have Cate speaking to her classmates inside the classroom by making a video of her speaking to her classmates. The third goal was to have the entire class watch Cate speaking to her peers.

At the request of the CT, the second VSM session was conducted the next day in front of the entire class. The CT explained to the entire class that everyone had to make a video of themself interviewing others. With Cate's permission, the CT showed the video footage depicting her conversing with Cate as an example for the assigned task. The children were paired up, taking turn using the classroom iPad and shot similar video as the assignment.

The mother reported that Cate was nervous at first when the video was shown to the entire class. However, upon seeing that most of her peers were not reacting to her speaking to the CT and some turned around to give her an encouraging smile, Cate

started smiling and seemed to display a sense of pride. Mother further reported that Cate was not as anxious when compared to the first VSM session.

After the second VSM session, Cate was immediately paired with her best friend whom she spoke to on the school playground but not inside the classroom to make the class video. Cate was engaged in the video-recording project with her friend. The CT reported that the same day Cate spoke to her classmates inside the classroom (new behaviour), and said "good night" to her in front of a friend inside the classroom (also new behaviour). Cate continued to make progress after the video project, as the CT noted the following day Cate spoke to her again and another classmate inside the library.

The mother reported that Cate was excited by the progress made within such a short time frame, and was looking forward to the first SF session where she anticipated to finally be able to speak to her peers freely inside the classroom. Two days after the VSM sessions, Cate brought her favourite portable video game along to the SF session. She wanted to explain to her peers how to play her favourite game. During the SF session, Cate started explaining to her mother how to play the video game when the CT, who brought along Cate's two close peers with her and joined in the activity. Mother reported that Cate became anxious (level=8) as the group entered the room. Cate stopped talking and remained silent for the entire session. It is important to note that the researcher was not present at the SF session because Cate, her parent, and the CT were anxious to get started. The stakeholders, including Cate herself, did not expect that Cate would remain mute during the entire session and therefore did not expect that they would need to wait for the researcher's guidance. It was apparent that the first SF activity was too anxiety-

provoking for Cate, and the researcher suggested to start with just the CT for the next SF session, then to include one peer at a time during the subsequent sessions.

However, with factors beyond our control Cate and her mother opted to conclude the intervention phase early but were willing to continue onto the post-intervention and follow-up assessments. The researchers offered as much support as needed, and conducted the post-intervention assessments immediately. Table 5 summarizes the components of the intervention. Note that the observation forms for VSM and SF sessions are strictly used within the intervention sessions in order to explore the participants' reaction to each session (e.g., too anxious, not anxious at all, etc.) in order to plan for subsequent sessions that reflect each child's needs. Hence, they are not part of the data collection that examines the efficacy of augmented VSM intervention.

Findings From Quantitative Data

Like many single-subject studies involving a small sample size, rating scores from quantitative data were analyzed and graphed to allow for visual analysis to be conducted (Tawney & Gust, 1984).

In total, 406 assessments/measurements were conducted throughout the entire study which included nine Selective Mutism Questionnaires (SMQ), nine School Speech Questionnaires (SSQ), 210 Parent Daily Ratings of Child Behaviours (DRCB), 150 Teacher Ratings of Student Behaviours (DRSB), and nine in-class observations. Among these, SMQ, SSQ and in-class observations yield quantitative data as they provide ratings and scores. While the intention was to conduct quantitative analysis on DRCB and DRSB (e.g., number of words spoken by each participants), the stakeholders only provided descriptive data (e.g., “many,” “1,000s,” “lots,” and blanks) to describe each child’s

frequency of speech, which were of little value for data analysis. However, the comments provided by the stakeholders with regard to whether the participants depicted new verbal behaviour (i.e., speaking to a new person, in a different context etc.) were recorded to support the effectiveness of the intervention (see Tables 15-20).

Findings from SMQ and SSQ. SMQ and SSQ assessments were conducted during baseline, post-intervention, and follow-up, and are the main data source for the quantitative analysis for this study. SMQ measures a child's verbal behaviour across three domains: (a) At school; (b) At home; and (c) Within social situations (outside of school). Teacher's SSQ measures a child's verbal communicative behaviour within the school only. Data obtained from SMQs and SSQs were gathered and plotted in graphs to allow for visual analysis (Tawney & Gast, 1984) to be conducted. Visual analysis remains the most predominant and preferred method for single-subject research (Busk & Marascuilo, 1992) because the slope of the data points (i.e., trend) helps researchers determine the reliability of the intervention effects (Kazdin, 1982).

SMQ and SSQ scores are simple to interpret, as higher scores reflect a higher frequency and lower scores reflect a lower frequency of verbal behaviour. Therefore, an increase in mean score (i.e., acceleration of the slope/trend) between baseline and post-intervention signifies progress gained (higher verbal activity), and if the scores did not decrease between post-intervention and follow-up (i.e., zero celeration of the slope/trend), then it indicates that the verbal communicative behaviour was maintained at the one-month follow-up.

Ava. Ava's parent-reported SMQ scores indicated a positive change from pre-intervention to post-intervention. These positive changes were reflected by the higher

scores occurred in all settings: “At school,” “With family,” and in “Social Situations” (see Figure 1). Ava’s greatest increase in verbalizations occurred in the domain of “Social Situations” from the baseline measure of one to six post-intervention, which represented a 500% increase (see Table 6 and Figure 1). Her verbal activity within the school increased from baseline of five to 13 post-intervention (160% gain) while her verbal scores with family members increased from 12 to 14 (16.67% gain).

Teacher-reported SSQs from baseline to post-intervention also revealed Ava’s increased verbal activities within the school (Table 6). Because Ava was already speaking to her friends and selectively to her CT (higher baseline scores), the gains were not as significant in comparison to SMQ’s. Nevertheless, Ava’s SSQ score increased from baseline of 11.5 to 12.5 (8.7% gain), and she continued to make small progress afterwards with a 13 follow-up score (further 4% gain from post-intervention).

Not only were Ava’s post-intervention total scores and mean scores higher than pre-intervention, she continued to make progress post-intervention. As demonstrated in Table 6 and Figure 1, Ava’s follow-up scores (conducted 1 month following post-intervention) across all settings were higher than those obtained from the post-intervention measure.

Note that there was a significant difference between SMQ’s “At School” score as reported by parent and those (SSQ’s) reported by the CT during baseline despite both containing identical set of questions. For instance, in response to the statement “When appropriate, my/the child talks to most peers at school,” the score from SMQ was one (seldom) while SSQ was three (always).

Similarly, when responding to the statement “When called on by his or her teacher, my/the child answers,” the SMQ score was zero (never) while SSQ was 1.5.

These discrepancies are understandable and predictable; as Ava had never spoken to the CT in front of her mother prior to the intervention despite the fact that she was already selectively speaking to her.

Bella. Parent-reported SMQ scores reflected that Bella's verbal activity increased in all domains (i.e., "At School", "With Family," "In Social Situations") from baseline to post-intervention. Her most significant improvement occurred within the "In Social Situation" domain, from the baseline measure of one, to five post-intervention. This score alone represented a 400% increase while her verbal activity "At School" also increased by 100% and the "With Family" measure revealed a 15.38% increase.

Bella's SMQ scores indicated that she continued to make progress post-intervention. The follow-up scores revealed that she gained another 41.67% in the "At School" domain, 13.33% for "With Family," and 40% for "In Social Situations" (see Figure 2 and Table 7).

While teacher-reported SSQs also revealed improvement of 21.43% from baseline to post-intervention, a decrease of 17.65% was noted during the follow-up (compared to post-intervention). This result clearly contradicted with the parent ratings of 41.57% gain for the "At School" functioning on SMQ. Despite contradictory reports, the mean scores from SMQ and SSQ during baseline, post-intervention, and follow-up phases indicated that Bella had become more verbal post-intervention, and the improvement was maintained during the follow-up.

Cate. Cate's mother was uncomfortable rating Cate's verbal functioning within the school so there were no scores reported for the "At School" domain of the SMQ (see Table 8). Aside from this, Cate's parent reported on all other domains and measures throughout all phases of the study. Despite that Cate only received one week of

intervention (2 VSM and 1 SF sessions), her SMQ score indicated a 25% verbal improvement in *Social Situations*. Her SSQ scores also indicated a 50% verbal improvement, which is the greatest increase from baseline to post-intervention among all participants. Data from SMQ and SSQ also revealed that her verbal behaviour was maintained during the 1 month follow-up (see Figure 3 and Table 8).

All three participants' SMQ and SSQ scores also demonstrated increased verbalization (acceleration of the slops) from baseline to post-intervention, and this trend continued (with the exception of one domain) to the follow-up phase. For instance, the post-intervention parent-reported SMQ scores which revealed that all three participants' verbal activities increased by 127.27% in the "At School," 9.3% in the "With Family," and 85.71% in the "In Social Situations" domains. The follow-up scores revealed further increases of 24%, 6.38%, and 11.54% in the "At School," "With Family," and "In Social Situations" domains, respectively.

Teacher-reported SSQ scores reflected that all participants' verbal activities increased by 18.8% from baseline to post-intervention. However, a decrease of 7.69% was noted during the follow-up phase. Despite this, the overall participant scores increased for verbal activity upon post-intervention (an increase of 36.65% in total score and 37.73% in mean score) and continued during the follow-up phase (an increase of 37.73% in total score and 3.41% in the mean score). Figure 4 and Table 9 demonstrate the increased verbalization of all participants from the baseline to the follow-up phase.

Findings From Classroom Observation

The researcher consulted with CTs to schedule the classroom observations during a lecture period (30 minutes) and a break period (30 minutes) inside the classroom to capture each child's communicative behaviour within different contexts. The

observations were conducted during baseline, post-intervention, and follow-up phases. Data collected was organized, tabulated (Tables 10-14), and plotted in graphs for visual analysis (Figures 5-8). An examination of the graphs revealed an upward pattern in all graphs except the one labelled "anxiety level" (Figure 5). This indicates that the level of anxiety had decreased (or remained constant) while all other attributes had experienced an upward (or constant) trend from baseline, to post-intervention, and to the follow-up phases. These positive gains included: (a) the number of words each participant spoke; (b) the audible volume of their speech; (c) the number of new people each child spoke to; and (d) their responses to verbal approaches (e.g., "Non-responsive," "Facial expression," "body gesture," and "verbal").

For instance, an upward trend was noted for Ava and Bella's "Number of Words Spoken" during class (Figure 6) from baseline to post-intervention; and this trend flattened (i.e., zero celeration) during follow-up. This means that both girls spoke more words during post-intervention, and that their verbal behaviour was maintained during follow-up (see Figure 6).

Not only was a similar upward trend found for Ava and Bella's "Speech Volume" measurement during class and during break (Figure 7), but they also spoke to more new people during post-intervention than baseline, as evidenced by the upward trend depicted in Figure 8.

While Cate did not show any verbal activity during the observations, there was an increase of 50% (one point) in her "Response to Verbal Approaches" during class upon post-intervention (see Figure 9). Instead of relying on facial expressions (see Findings From Qualitative Phase), Cate started using more body gestures including raising her hand to engage in non-verbal tasks during post-intervention. Potentially, these changes

may have resulted from an increased confidence and greater comfort and ease in the classroom environment (refer to Findings From Qualitative Phase on p. 71).

Bella's response to verbal approaches also improved 50% (one point) during class. However, this upward pattern was most evident for Ava (1.5 points), a potential positive effect of her increased self-confidence (as reported by her mother in the QUAL phase of the study, as discussed later). Figures 5 to 9 and Tables 10 to 14 summarize the participants' in-class communicative behaviour as well as participants' anxiety level obtained during baseline, post-intervention, and follow-up phases.

Findings From Parent's (DRCB) and Teacher's (DRSB) Daily Observation

The goal of utilizing the Parent's Daily Rating of Child Behaviour (DRCB) and Teacher's Daily Rating of Student Behaviour (TRSB) measurements was to obtain quantitative data such as the number of words spoken by the child during baseline, post-intervention, and follow-up phases. Parents rated their child's verbal behaviour daily while CTs rated their student during school days. However, since Ava and Belle were already speaking to peers and to selected adults, their mother and CT put down descriptive data such as "many," "too many to count" instead of the "# of words spoken." Conversely, since Cate was non-verbal inside the classroom, DRSB recoded "# of words spoken" were all left blank, and DRCB were "1,000s" to depict her verbal activity with family members. Not only are these descriptive data difficult to establish reliability, it also makes speech fluctuation comparisons between study phases impossible to measure. Hence, parents and CTs were instructed to record in their DRCBs and DRSBs when their child exhibits new verbal behaviours such as speaking to a person for the first time, or engaging in a conversation instead of the typical brief or prompted speech for the first time.

Descriptive data were gathered and sorted. Redundant and repeated data were eliminated to compile a list of new verbal behaviours exhibited by each child during intervention, post-intervention, and follow-up phases (Tables 15-20). While it would be difficult to establish validity and credibility of these findings without using the instruments properly, the quantity (i.e., numbers) of the new verbal behaviours which occurred within the QUAN phase supplemented the findings from SMQ, SSQ, and classroom observations.

In total, 22 new verbal behaviours were observed and maintained by the participants. For instance, DRCB recorded that Ava and Bella spoke to their grandfather, aunts, friend's parents, and to their mother in front of the babysitter for the first time. The DRCB further reported that Ava spoke to the supply teacher and mouthed to Santa Claus in the shopping mall, while Bella spoke to the tutor for the first time. Similarly, DRSB reported that Ava also spoke to the Vice principal, and Bella spoke to the Education Assistant for the first time.

Despite with two VSM sessions and one failed SF session, reports from DRSB of Cate also revealed that she achieved several major milestones. Cate's new verbal activity included speaking to (a) the piano teacher in the school hallway; (b) the CT in front of mother; (c) the CT in front of a friend; (d) classmates and friends inside the classroom; and (e) the music teacher in the classroom; all for the first time.

In sum, findings from the SMQ, SSQ, DRCB, DRSB, and classroom observations have demonstrated that all three participants' verbal behaviours had significantly increased post-intervention. Not only had the twins maintained their verbal communicative behaviour upon post-intervention, their elevated scores from the one month follow-up signified that

they continued to make progress. While Cate only went through one week of intervention, her total post-intervention scores were higher than the baseline, and her follow-up scores indicated that her speech pattern was maintained as well.

The total intervention time spent for Cate was 65 minutes, and 130 minutes for Ava and Bella. Not only are these short intervention periods consistent with Kehle et al.'s study (within 130 minutes of intervention per child), but in this study all three participants' "speech occurred immediately after the onset of treatment" (Kehle et al., 1998, p. 257). This result is positive in comparison with other behavioural interventions that took months or years (see McLeod et al., 2010; Sheridan, Kratochwill, & Ramirez, 1995).

Findings From Qualitative Phase

In accordance with the explanatory sequential method, a QUAL phase was conducted after the QUAN phase in order to "help explain or elaborate on the quantitative results" (Creswell, 2012, p. 542). Since the QUAL phase of this study revealed that augmented VSM as an effective intervention technique for SM, the aim for the QUAL phase was to help explain how this technique was effective by exploring the perspectives and experiences of the participants and stakeholders. Hence, one-on-one interviews were conducted with all participants and stakeholders (N=7) upon the follow-up phase of the intervention.

The participants' interviews, which consisted of mostly close-ended questions, took place inside their empty classrooms. Due to their young age, the goal of these interviews was to explore their experience (not perspective of) with the augmented VSM intervention. However, the interviews with the stakeholders aimed to explore their

experience as well as perspective of the augmented VSM technique. The parents' interviews with open-ended questions took place at nearby coffee shops. Due to busy schedules, both CTs declined the interview, and requested to obtain the interview questions in written form in which they responded at a later date (within 2 weeks). A hand analysis was conducted due to the small data size (Creswell, 2012; Creswell & Plano Clark, 2011).

The data collected was manually coded and organized based on the following research questions: "What are the perceptions and experiences of teachers, parents, and children regarding the use of the augmented VSM technique?" This questions focuses on three areas: (a) What perceptions of the effectiveness of the strategy do the stakeholders narrate? (b) How do the participants and stakeholders experience the augmented VSM intervention? and (c) How do the stakeholders describe their expectation for and the impact of the strategy?

What Perceptions of the Effectiveness of the Strategy Do the Stakeholders Narrate?

Several consensus statements among the stakeholders credited the increase in verbal communication activities as an indication that augmented VSM an effective strategy for SM. For instance, Cate's CT stated that not only did Cate became "more responsive" after the video viewing as well as speaking to her for the first time, she was also able to respond when presented with a variety of questions. Cate's mother agreed and reported that the intervention enabled Cate to "speak to a few friends in the playground."

Similarly, Ava and Bella's teacher reported that the intervention has enabled the girls to "speak louder, participate in class regularly, answer questions in class, talk loud enough in class and seem more comfortable at school."

"Confidence" seemed to be the overall impact resulted from the augmented VSM intervention. Cate's mother reported that VSM "helps children with SM to see themselves talking in situations where they don't normally speak." She further clarified that VSM technique "shows my child that nothing bad happens [after the viewing session], and other kids were very happy for her to see her speaking [in the video]." These experiences helped Cate become more confident and relaxed inside the classroom. Similar perspectives were obtained from Ava and Bella's mother as she reported that augmented VSM "shows the SM child that they can speak to teachers/adults without anything bad happening." As such, she credited augmented VSM for her children's newfound "confidence and courage," so that they became "more at ease at drop off to school in the morning" and had a "sense of belonging" at school.

It is interesting to note that while the increase in confidence seemed to enable the participants to engage in new verbal behaviours, it may not be as impactful within academic contexts. Specifically, confidence in the subject matter seems to pose a greater influence on a child's verbal behaviour within the classroom than a child's confidence in speaking. For instance, during the follow-up in the QUAN phase, the CT noted that Bella's slight setback in the School Speech Questionnaire (SSQ) was "likely caused by her academic weakness and thus her lack of confidence to speak up in class" (see Figure 2 and Table 7 for details).

How Do the Participants and Stakeholders Experience the Augmented VSM Intervention?

The parent of Ava and Bella reported that the intervention experience was "good for the girls". For VSM, she explained that “it didn't take too long before [the girls] were comfortable enough and didn't require watching [the edited footage further].” As for stimulus fading (SF) technique, she described this technique “a gentle way of introducing people to your child they wouldn't usually speak to.” She further explained that the activities from SF allowed “adults to meet children at their level, therefore children are more likely to feel safe and comfortable.”

Cate’s mother thought the entire experience was helpful. She clarified that at first, Cate did not want to watch the edited video footage, but after reassuring her that “she has total control of how much [she] could watch, she was OK with it.” Cate’s mother further expressed her gratitude toward the CT, who involved the whole class in paired interviews on the iPads after viewing the edited footage together. This fun and inclusive activity not only avoided singling Cate out, it also motivated Cate to voluntarily demonstrate another video which depicted her speaking to another classmate, in front of the entire class, which was a “big step for her!”

There were mixed feelings about the augmented VSM technique among the CTs. For instance, Ava and Bella’s CT reported that the augmented VSM process was “long,” and that VSM by itself “had no impact” for the girls. She explained that she did not view VSM as an effective stand alone protocol for SM in her students’ situation because the twins “viewed the video only a few times” and did not show it to their classmates. She believed that VSM would be more effective with students with more severe mutism. The

CT further stated that the play (i.e., stimulus fading) sessions “were impactful,” because these activities “showed the girls that they could talk, yell, and be goofy etc.” She believed that stimulus fading sessions were key to establishing the girls’ "comfort zone" within the classroom. The CT further expressed that she thought the rewards (i.e., self-reinforcement technique) were a great idea because “the simple excitement of a wee gift” enticed the twins to speak initially and then “they soon realized how easy it was to actually speak [and] then it became second nature for them [to speak].” Cate’s CT agreed. She said that overall, the intervention “was a positive experience,” as this was the first time Cate spoke to her in front of others.

Feedback From the Child Participants

All three participants were able to make eye contact and spoke freely with the researcher upon conclusion of the augmented VSM intervention. The researcher proceed with a briefing session with them (i.e., their rights for not answering questions at any point) without the involvements of the parents. She remained cautiously alert during the one-on-one interviews, to avoid putting these children “on the spot” in case they were unable to response to my questions. Because Brock University’s Research Ethics Board was most concern with the deceptive component of the augment VSM intervention (i.e., the video depicted the child speaking to the CT but in fact she was speaking to her mother), and the potential emotional risk that this technique may have on these children, the researcher's main goal was to explore whether augmented VSM was an intrusive technique and how the participants perceived it.

The responses from the participants (see Table 21) revealed that augmented VSM was perceived not an intrusive technique for young children with SM. In response to “Do you think it was a good idea to make the movie?”, all three participants thought that it

was a good idea. They also liked that it was shown inside the classroom. Ava and Bella both reported that they felt happy watching the video footage, and they further elaborated that the best part about watching the video was receiving the little gifts. While Cate reported that she felt nervous viewing the video footage, she explained that the best thing she liked about watching the movie is "that everybody saw me talk." This confirmed the researcher's personal experience that most children with SM do wish to speak, they just do not know how to start, and are "too scared to talk" (Cate). In accordance to this, the augmented VSM technique may have provided one participant the bridging tool to help break her "silent identity" (Omdal, 2008, p. 312) in this study, and provided them the outlet to start speaking once her peers have already observed her new verbal behaviour for the first time.

How Do the Stakeholders Describe Their Expectations for and the Impact of the Augmented VSM?

Beside Ava and Bella's CT who reported that she "didn't really know what to expect from the intervention," Cate's CT and all parents affirmed that the intervention met their expectations. In addition to this, Ava and Bella's mother further explained that she felt this intervention "has exceeded" her expectations because the twins felt comfortable and were eager to participate early on, and that "they made great gains in such a short time period. [The intervention] has given them confidence and courage."

The mother also shared some unexpected gains from the intervention. She reported that even without formal diagnosis, she believed that from her perspective Ava's separation anxiety disorder had dissipated. For instance, Ava no long clung on her leg, cried out loud, and refused to let go before each school day. During the post-

intervention and follow-up phases, Ava was happy and prompt to attend school each morning. She was also able to go to the bathroom alone and no longer needed to go as frequently as prior to the intervention.

In sum, findings from the interview revealed that the stakeholders view their overall experience with augmented VSM to be a position one. In response to how augmented VSM impacted their children, the general consent was that this technique provided the participants with an increased self-confidence to engage in verbal behaviours. Three stakeholders confirmed that the intervention result met their expectation while one mother stated that it has "exceeded" her expectations. Positive responses were also obtained from the participants' interview. All participants "liked" watching the edited video footage inside their classroom, and indicated that the video helped them speak to more people.

Chapter Summary

Findings from the QUAN phase indicated that augmented VSM is an effective strategy in resolving SM. As demonstrated, all three children engaged in more verbal communications across all settings during post-intervention, and their speech patterns were maintained during the 1-month follow-up. QUAL findings revealed that parents and CTs reported a positive experience with the augmented VSM technique. Not only did they view augmented VSM as efficacious in promoting verbal activities, they also believed the intervention positively impacted the children by boosting their self-confidence, which enabled them to engage in verbal communications and or become more responsive to verbal demands.

CHAPTER FIVE: DISCUSSION, IMPLICATIONS, AND LIMITATIONS

Many children with SM live with their disabling condition unnoticed for many years because there is a lack of awareness of SM among educators, parents, and health care professionals (Omdal, 2007; Schwartz et al., 2006). These children's mutism behaviour becomes entrenched as time passes, and can become resistant to treatment with each failed intervention (Shipon-Blum, 2011). Hence, there is a need to explore an intervention technique that is both appropriate and effective. Because most SM interventions tend to be daunting (Sloan, 2007) with documented treatments that last over a year without appreciable results (Cohan et al., 2006), one study employed augmented VSM and documented that "speech occurred immediately after the onset of treatment" (Kehle et al., 1998, p. 257) deserves special attention.

The main purpose of this study was to examine the effectiveness of augmented VSM as an intervention technique for SM. The current investigation employed a mixed methods explanatory sequential design that involved a QUAN phase that was followed by a QUAL one. The first phase, QUAN, consisted of the augmented VSM intervention. It was informed by Kehle et al.'s (1998) procedure which employed the single-subject, baseline-intervention approach with an A/B design. The aim of the second phase, QUAL, was to extend the findings from the QUAN phase by exploring the participants' and stakeholders' experiences with the augmented VSM technique.

This chapter provides a summary of the present study and its findings. Implications for theory, practice, methodological limitations, and implications for future research are also provided.

Summary of the Study

Three 8-year-old grade 3 female students with selective mutism (SM), their mothers, and their classroom teachers participated in the present study to address the following research questions:

1. Is augmented VSM an effective strategy in resolving the mute behaviour of young children with SM? After intervention, will these children engage in more verbal communications across all settings (i.e., home, school, and community), and will the speaking behaviour be maintained at the one-month follow-up?
2. What are the perceptions and experiences of teachers, parents, and children regarding the use of the augmented VSM technique? This question focused on three areas: (a) What perceptions of the effectiveness of the strategy do the stakeholders narrate? (b) How do the participants and stakeholders experience the augmented VSM intervention? and (c) How do the stakeholders describe their expectation for and the impact of the strategy?

The first question guided the QUAN phase, and the second question guided the QUAL phase of the study.

Quantitative (QUAN) Phase

In accordance with the single-subject (A/B) design, baseline evaluations of each child's verbal behaviour were conducted through questionnaires administered to the stakeholders (i.e., parents and CTs) and also included observation data from the stakeholders and the researcher. Upon the 8-week intervention, the same evaluation was repeated to determine whether augmented VSM had any effect on each child’s verbal behaviour. Then, a final evaluation was conducted during the 1-month follow-up, to

determine whether the participants' verbal behaviours have been maintained. In fact, evaluations of each child's verbal behaviour was conducted frequently and consistently (i.e., daily observations conducted by the stakeholders) throughout the entire QUAN phase in order to demonstrate a causal relation (Nock et al., 2008) between the intervention and the change of the child's verbal behaviour.

Upon data collection and analysis, this phase confirmed that augmented VSM is an effective intervention technique for SM. The latency of change (Kazdin, 2011) of verbal behaviour from baseline to post-intervention was observed in all three participants upon visual analysis of the trend and slopes (i.e., acceleration) of the graphs, and all participants' verbal behaviours were maintained at the 1-month follow-up.

Qualitative (QUAL) Phase

The QUAL phase consisted of interviews with the participants and stakeholders. The participants' interviews consisted predominately of close-ended questions to explore their experience with the VSM sessions, while the open-ended questions with the stakeholders aimed to extend the findings from the QUAL phase (why and how the intervention impacted the participants).

Findings from this phase revealed that all participants had a positive experience with the VSM sessions. There is also a general consent among the stakeholders that the intervention was a positive experience for them as well as for their children/students. All stakeholders believed that the intervention has boosted the participants' self-confidence, which was perhaps the driving force for the children to engage in new verbal behaviours.

Discussion of the Findings

The following section discusses the findings from the QUAN phase of the study in relation to the literature. As well, findings from the QUAL phase of the study are consequently discussed.

Quantitative Phase

Findings from this study phase corroborated the findings from Kehle et al.'s (1998) study using augmented VSM as an intervention technique for SM in two ways. One is that the rapidity of change was noted in both studies in which "speech occurred immediately after the onset of treatment" (Kehle et al., p. 257). The other is the brevity of interventions from both studies was strikingly similar. Participants in Kehle et al.'s study each received appreciable results within 130 minutes of intervention, while the total intervention time in the present study was 65 to 130 minutes for each participant.

Previous research suggested that SM intervention is time consuming and "daunting" (Sloan, 2007, p. 99) with documented interventions that took over a year without appreciable results (Cohan et al., 2006). The present study did not confirm these findings. Instead, the results from Kehle et al. (1998) that an intervention package consisting of a combination of empirical supported behavioural techniques could result in the "most rapid speech acquisition with the greatest generalizablity" (Kehle et al., p. 248) was also experienced in this study.

Qualitative Phase

The goal for the QUAL phase was to extend the findings from the QUAL phase to understand how and why augmented VSM was an effective technique for SM. The focus was to explore the participants' and stakeholders' perceptions and experience with

augmented VSM as well as what their expectations were in regard to the impacts from the intervention.

In terms of the participants' experience of the VSM intervention, findings based on face-to-face interviews revealed that the participants all enjoyed the VSM sessions. In response to "What do you like best about watching the video," the twins liked the little gifts (reinforcers) that they received. This information suggested that reinforcements might have had a salient role in motivating the twins to engage in the VSM sessions. In fact, the reinforcement technique was well received by the stakeholders (parents and CTs) as well. The twin's CT reported that the rewards (reinforcements) were a great idea because the excitement of "a wee gift" helped entice the girls to start speaking initially then it "became second nature for them [to speak]" (stimulus fading). As such, it seems that reinforcement was also helpful for stimulus fading (SF) sessions in this study. This finding is in line with previous research on SM intervention that documented using the reinforcement technique to successfully elicit speech. These studies (e.g., Jackson et al., 2005; Sloan, 2007), like the current one, had a reward system in place to reward any progress made by the child with tangible and non-tangible items such as stickers, hugs, ice-cream, and family game time.

Despite that one participant (Cate) said she was nervous while watching the video, she reported that she was glad that it happened because "everybody saw me talk." Prior to the study, Cate has never spoken inside the classroom, and her mother shared that despite Cate's willingness to speak to everyone, "she just did not know how to do so." Perhaps the VSM session that involved all her classmates helped break Cate's "silent identity" (Omdal, 2008, p. 312) and served as a bridging tool for her to start speaking within that context.

While VSM seemed to have had a positive impact on Cate, the twin's CT believed that VSM did not have as great an impact in comparison to the SF and reinforcement (little rewards) techniques. This CT believed that VSM could be more beneficial for children with severe SM but not for the twins because they were already speaking to her selectively, and only required two sessions of VSM.

With respect to how the stakeholders described the experience and impact of the augmented VSM intervention, findings revealed that all stakeholders had a positive experience. The stakeholders believed that the impact of the augmented VSM had perpetuated to the participants' elevated self-confidence, which enabled the participants to engage in new verbal behaviours. All stakeholders reported that the intervention met their expectations and one parent shared that it has exceeded hers. She detailed that not only had her children "made great gains in such a short time period," but her one child's (Ava's) behaviour associated with separation anxiety disorder also seemed to have dissipated. The mother shared that Ava became happy and was prompt to attend school each morning (instead of clinging on the mother's leg, crying out loud, and refusing to let go), and was able to go to the bathroom alone and no longer needed to go as frequently post-intervention.

Implications for Theory

The augmented VSM technique used in the present study consists of three main behavioural techniques for SM intervention: video self-modeling (VSM), stimulus fading (SF), and reinforcement. The recent conceptualization of SM as an anxiety disorder by the American Psychiatric Association (APA, 2013) supported the proposal of SM as a variant of anxiety disorder by previous studies (e.g., Sharp et al., 2006; Standart &

Couteur, 2003). Hence, behavioural approaches for SM have been well documented as the most proven effective intervention strategy for SM (Brigham & Cole, 1999; Dow, Sonies, Scheib, Moss, & Leonard, 1995; Pionek Stone et al., 2002).

Behaviourist believe that one's behaviour is a result of learned adjustments to the environment, and therefore, can also be unlearned by modifying that environment (Erk, 2003). With respect to children with SM, behaviourist would argue that the child's silent behaviour is a result of learned adjustment to his or her environment. For instance, when a child is spoken to and becomes anxious, she avoids eye contact or speaking (a learned adjustment) and experiences a temporary decrease in anxiety. Over time, these avoidance behaviours that are developed to deal with anxieties become conditioned and entrenched, and this self-reinforced habit of mutism is formed. Accordingly, in order for a child to unlearn her learned adjustments, behavioural therapy aims to distinguish the reinforcers that help maintain the mutism behaviour while decreasing a child's anxiety to elicit speech (Wright, Cuccaro, Leonhardt, Kendall, & Anderson, 1995). Behavioural techniques for SM include VSM, stimulus fading, and reinforcement.

Video Self-Modeling

The video self-modeling strategy is based on Bandura's (1986) social learning theory. The social learning theory states that an individual learns from observing others by modeling and imitating them. Bandura also postulates that self-efficacy—the beliefs about one's capability to succeed—can also be acquired through observation of one's own success, and is a salient factor in promoting learning. Hence, VSM provides children with SM the opportunity to repeatedly observe themselves performing the target behaviour—

speaking to a certain individual whom the child does not speak to within the edited video footage—to increase their self-efficacy in speaking to an individual.

Although this study did not measure the participants' self-efficacy, one main theme derived from the interviews with the stakeholders was that the increase in self-confidence resulted in more speech. All stakeholders unanimously shared that they believe the augmented VSM intervention increased the participants' self-confidence and enabled them to engage in new verbal behaviour.

Since VSM was well received by all participants, this study contradicted empirical findings which state that self-modeling "may not work well with some anxious youngsters" (Cohan et al., 2006, p. 1094) because it could increase a child's anxiety about speaking (Powell & Dalley, 1995). In fact, it is possible that VSM is an ideal technique for severely mute children considering that: (a) Cate was more impaired by SM (never been seen or heard speaking inside the classroom); and (b) Cate only received two successful VSM and one failed SF sessions. Potentially, VSM contributed to her new verbal acquisition.

While the goal for conducting VSM in front of the whole class is to increase the peers' expectation of speech and to discourage them from speaking for the child with SM (Kehle et al., 1998), this study also found that VSM may have provided an outlet for the child to start speaking in contexts where the mutism persistently occurred. A revisit to the QUAL findings helped cast lights on the maintenance of SM beyond the anxiety component. For instance, during baseline, Cate's mother shared in the interview that her daughter would very much want to speak to her friends, she just did not know how to start. Cate also shared that she liked VSM because everyone saw her speaking for the first

time. These insights helped reveal one important yet unreported benefit of this technique: VSM can serve as an outlet for a child to start speaking by breaking his/her "silent identity" (Omdal, 2008, p. 312).

Furthermore, since VSM is well received by all participants, this study contradicted empirical findings which posited that self-modeling may not be suitable for some children (Cohan et al., 2006) because it could increase a child's anxiety about speaking (Powell & Dalley, 1995). While it is premature to conclude that VSM is an ideal technique for children with SM, it is also difficult to ignore the impact that VSM had on Cate since she only received two successful VSM and one failed SF sessions and that her speech occurred immediately upon the second VSM session. This immediate change suggests that the increase of the dependent variable (i.e., verbal behaviour) was a result of intervention (i.e., VSM sessions) rather than other factors such as maturation of the participants.

Stimulus Fading

Stimulus fading is an exposure-base technique that is based on classical conditioning principles (Garcia et al., 2004). Since children with SM use silent behaviour to help reduce or avoid anxiety, the SF technique is helpful as it aims to change the stimuli that controls speech, "so that over time, a larger number of situations become discriminative stimuli for speaking" (Labbe & Williamson, 1984, p. 277). One way to implement SF in SM intervention is to engage the child in a verbal game with the mother inside the classroom and the door closed. Gradually, stimuli from the perceived "safe" environment (i.e., the closed door, mother) are faded out while the perceived "threatening" environment (i.e., door opened, close peer entered the room) factors were faded in. Over time, the child who confronts the threatening stimuli will no longer

associate it with the anxiety response (the mutism behaviour). The findings from this study confirmed empirical research (e.g., Rye & Ullma, 1999) stating that SF is an effective intervention approach, especially when combined with another behavioural modality. The findings from the interview helped shed light on how SF was effective. For instance, one CT believed that SF helped the children "realize how easy it was to actually speak [and] then it became second nature" for them to do so. One parent also shared that SF allowed "the adults to meet the children at their level, therefore the children were more likely to feel safe and comfortable [to speak]." She further shared that SF was "a gentle way of introducing people to your child [that] they wouldn't usually speak to."

Reinforcement

The reinforcement technique is based on the Skinnerian operant model of learning: if certain behaviour is reinforced or rewarded, then that behaviour is more likely to occur in the future (McGinn & Sanderson, 2001). With respect to the present study, the little wrapped gifts as well as the mystery gifts served as reinforcers, and the participants were rewarded upon executing the target behaviours. Based on the findings from the interviews, the reinforcement technique was also well received by the participants and stakeholders. One CT thought that the little rewards were a great idea to entice her students to speak. All the participants' parents shared that the rewards helped their children to continue watching the video recordings. The twins also shared that they liked the rewards (reinforcement technique) best while watching the edited video footage. Due to the fact that all participants responded well to the reinforcement technique, this study does not agree with previous research cautioning that reinforcement most effective for children who have already established some comfort level of speaking, and not those who are extremely reluctant to speak (Lachenmeyere & Gibbs, 1985).

Spacing Effect

The augmented VSM technique also included a spacing effect. Spacing effect is the phenomenon where one learns more effectively when the material is presented several times and spaced out over a longer time span instead of a single mass presentation (Dempster, 1998). Accordingly, two participants in Kehle et al.'s (1998) study viewed the video footage five times in 4 and 5 weeks, and the third participant viewed his four times in 10 days. In the present study, the spacing effect was not properly implemented. Since two participants received 1.5 VSM sessions in 2 weeks, it was unclear whether the spacing effect had any impact on them. Similarly, one participant (Cate) received two consecutive VSM sessions within 2 days due to scheduling conflicts, and as such the spacing effect was not implemented.

In sum, findings from this study confirm results from empirical research that a behavioural technique is an appropriate modality for SM intervention. Specifically, VSM, SF, and reinforcement techniques each played a salient role in contributing to the success of the augmented VSM intervention. VSM helped the child participants believe that they have the ability to speak to anxiety-provoking figures, while SF provided them with the opportunity to practice and execute the verbal behaviour. Reinforcement, on the other hand, enticed the child participants with the motivation to take risks, and reward them upon executing the target behaviour. Therefore, all three techniques worked well together as a package.

The question that remains is which specific technique is more effective than the other as they were administered together and all seemed to have complimented each other positively. While the spacing effect was not implemented as part of the augmented VSM

technique, results from this study are strikingly similar to Kehle et al.'s (1998) in that both studies yielded rapid results and only took 130 minutes or less of the participants' time. Given that the augmented VSM technique described in this study is rarely implemented in SM intervention, more studies incorporating the augmented VSM technique are needed to establish a knowledge base and to help strengthen the present research findings.

Implications for Practice

The findings from the present study reveal that augmented VSM (i.e., VSM, SF, and reinforcement techniques packaged together) is effective for addressing SM. This study also demonstrates that SM intervention should begin inside the child's classroom using a team-based approach that comprises parents, CTs, and an SM expert (i.e., the researcher). In light of these findings, several implications for practice merit discussion if the augmented VSM technique is chosen for SM intervention.

First of all, it would be difficult to find an SM expert to orchestrate the intervention since empirical studies have demonstrated that many health care professionals including the primary physicians are not familiar with SM (Schwartz et al., 2006). This lack of knowledge is also apparent in this study considering that all participants were not properly diagnosed with SM until 2.5 to 4 fours years later despite exhibiting restricted speech on a daily basis. Also, two participants (Ava and Cate) both received ineffective referrals (art therapy), which resulted in failed interventions. These inappropriate referrals and ill-informed practices on SM might have detrimental effects on the participants. Shipon-Blum (2011) stressed the importance of both appropriate and

effective techniques for SM because the mutism behaviour can become further strengthened and entrenched with each failed intervention.

Two unanticipated issues occurred during the study that further highlighted the importance of involving an SM expert in SM intervention. As indicated, the researcher was present in all intervention sessions to provide guidance with the exception of Cate's one and only failed SF. It was apparent that the SF session was too anxiety provoking for Cate and the stakeholders were not equipped with the knowledge to address the situation. Similar incidents occurred during the twin's last SF session (they were unable to speak to the male teacher and throw the ball to him), however, the researcher was present and was able to mitigate the situation (asked the male teacher not to face the girls) so that the twins were able to execute the task progressively. Considering that the present study involved three distinct behavioural techniques (VSM, SF, and reinforcement), the person who provides guidance in the SM intervention must also be familiar with all three modalities.

Another factor that warrants consideration pertains to the availability of the stakeholders. Due to the parent's busy schedules, the original, twice per week SF sessions (see Table 3) for the twins were reduced to once per week (Table 5). Perhaps in future studies, an additional school personnel with whom the child speaks to (e.g., resource teacher, school psychologist, Speech and Language Pathologist, etc.) could help facilitate the intervention sessions in place of the parent. Given that the number of SF sessions for the twins were reduced to half while the intervention duration did not change to accommodate the missed sessions, it would be interesting to explore whether a more

frequent SF session (twice per week) could afford a shorter intervention duration (4 weeks instead of 8) and still yield similar results.

Findings from this study also lend support for school based intervention since most children with SM predominantly fail to speak at school (Cohan et al., 2006; Standart & Le Couteur, 2003). This study further demonstrated that the participants' own classrooms, specifically, were an appropriate location to begin intervention before attempting to generalize speech. For instance, one participant (Cate) received cognitive behavioural therapy inside the school (in a private room) for one year and was still non-verbal inside the classroom prior to the study. The fact that she immediately produced speech inside the classroom upon the first VSM session highlighted that effective SM intervention must be conducted within the classroom where the child lacks speech,

Finally, this study revealed another factor that may help contribute to successful SM intervention sessions. Recall that Cate was initially very apprehensive about watching the edited video footage, but she was willing to do so upon the repeated reassurance from her mother that she would have full control on how much to watch. Also, the twins were provided with opportunities to suggest play activities in the SF session, and they were more engaged in activities where they could offer inputs (e.g., suggestions for check mark items, who to invite to their birthday party, etc.). All these led the researcher to believe that a successful SM intervention should engage the child by providing her with a sense of control and options.

Given the practical implications, future research needs to consider how the augmented VSM technique can be taught and facilitated by school personnel with whom the child feels comfortable and speaks to. Because SM experts are scarce, it is possible to

involve an expert from another location through live streaming (e.g., Skype) throughout the intervention process.

Methodological Limitations and Implication for Future Research

There are several limitations in the present study that may have implications for future research that merit discussion. First, the apparent limitation inherent from conducting a single-subject design that lacks a control or comparison group; it is difficult to argue that the behaviour changes occurred solely as a result of the intervention. Future studies that involve a larger sample size would allow for a control group in order to conduct the randomized controlled trails.

Based on the findings from the present study, it is also difficult to conclude which of the VSM, SF, or reinforcement techniques had made the most impact as they were combined together and used as a package. It would be interesting to explore which individual or combination of techniques within augmented VSM has the most impact on SM intervention. With a larger sample size, participants could be divided into groups. Each group could receive augmented VSM that emphasizes on a particular technique or a combination of techniques and to explore whether differences exist amongst groups with the adjusted techniques. For instance, one group could receive VSM, the second group could receive SF, the third group receives only reinforcement, the fourth group receives VSM and SF, the fifth group receives SF with reinforcement, and so on.

Because the researcher took part in the classroom observation, her presence may have impacted the participants' verbal behaviour as they might have behaved differently had another familiar figure been present. Future studies should consider involving personnel that the participants are familiar with (e.g., the student teacher, resource

teacher, etc.) to avoid skewing the results. Furthermore, due to the fact that the twins were intervened at the same time, it would be impossible to conclude whether the intervention would produce similar success had the twins been intervened separately.

The researcher also met with the parents at least once a week to set incremental verbal goals for home and the community, as well as to provide ongoing guidance on how to foster the participants' verbal behaviour. Consequently, it was unclear whether the parental education and the home/community component factors may have influenced the children's generalization of verbal communication at school. Future studies could explore this issue by building on the current study and exploring the parental education component and its impact on SM intervention.

An unanticipated issue occurred during the study and highlighted the importance of using validated assessment instruments, especially when frequent and ongoing assessments are essential for the study. While the main instruments used for this study are validated, this study uncovered some problematic issues with the daily observation instrument. It was anticipated that the observation data obtained from the stakeholders could be used to quantify and analyze the participants' verbal communicative behaviour across all settings and in all study phases. However, rather than providing the actual number of words uttered by the participants, the stakeholders recorded "1,000s," "too many to count," and or left the section blank in some cases. Future investigation should consider the severity of a child's mutism prior to selecting observation instruments. Perhaps an individualized instrument may be needed in order to appropriately record the frequency of a child's verbal behaviour rather than the numbers of word uttered. As demonstrated from this study, counting the number of words uttered by a child was not

feasible. Perhaps, an improvement could be made by adding another measurement with choices such as “barely, seldom, frequent, or very frequent” to describe a child’s verbal activity should the quantifying component be deemed not useful.

Finally, one limitation discussed in Kehle et al.’s (1998) study was that VSM required “relatively expensive equipment and considerable professional time devoted to videotaping and editing” (p. 258). Given the technological advancement, video recording equipment has become easily accessible; coupled with the fact that several user friendly video editing software such as iMovie and Sony Vegas are readily available, recording and editing footage for VSM sessions can now be done promptly and inexpensively. Since advanced technology pathways exist for the creation of more realistic augmented video footage, the augmented VSM technique for SM should be explored further.

Chapter Summary

Despite limitations and methodological challenges, single-subject design was the key in adding methodological rigor to investigations of SM (Viana et al., 2009). The findings of this study cast lights on the effectiveness of augmented VSM as an effective and non-intrusive technique for SM, and it was well-perceived by all participants and the stakeholders. While more research is needed to further demonstrate the augmented VSM and its potential contribution for SM intervention within the school context, this chapter offers some insights for the theoretical, practical, and methodological implications as well as future research directions.

Table 1

Characteristics of Participants

Child	Sex	Age	Age when SM Emerged	Age diagnosed with SM	Previous intervention/ treatment	Duration (and effect)	Other problems
Ava	F	8	3.5	6	Art therapy	6 months	Separation anxiety, fear of height, refuses to go to bathroom alone
Bella	F	8	3.5	6			
Cate	F	8	2.5	6.5	Art therapy CBT	3 months 1 year	Refuse to go to grandparent's bathroom

Table 2

Planning of the Video Self-Modeling (VSM) Sessions

Child	Sessions	Setting	Days/time	Person involved	Duration
Ava	2 to max.16 (twice/week)	Classroom	Tuesdays and Thursdays. Before school	Mother	10 minutes
Bella	2 to max.16 (twice/week)	Classroom	Tuesdays and Thursdays. Before school	Mother	10 minutes
Cate	2 to max.16 (twice/week)	Classroom	Mondays and Wednesdays. Before school	Mother	10 minutes

Table 3

Planning of the Stimulus Fading (SF) Sessions

Child	Sessions	Setting	Days/time	Person involved	Duration
Ava	1 to max.15 (twice/week)	Classroom	Tuesdays and Thursdays. After school	Mother	30 minutes
Bella	1 to max.15 (twice/week)	Classroom	Tuesdays and Thursdays. After school	Mother	30 minutes
Cate	1 to max.15 (twice/week)	Classroom	Mondays and Wednesdays. After school	Mother	30 minutes

Table 4

Data Collection Conducted Throughout the Study

Measure (conducted by)	Pre-intervention, baseline	Intervention	Post-intervention	Follow-up
SMQ (parents)	X		X	X
SSQ (teachers)	X		X	X
Child's background information (researcher)	X			
Child's school information (researcher)	X			
Classroom observation (researcher)	X		X	X
Daily observation (DRSB; teacher)	X	X	X	X
Daily observation (DRCB; parent)	X	X	X	X
Rating for VSM sessions (parent)		X		
Rating for SF sessions (parent)		X		
Parent interview (researcher)				X
Teacher interview (researcher)				X
Child interview (researcher)				X

Note. SMQ = Selective Mutism Questionnaire; DRCB = Parent Daily Ratings of Child Behaviour; DRSB = Teacher Daily Ratings of Child Behaviour.

Table 5

Components of the Intervention

Method	Experimental, baseline, single-subjects, A/B design
Intervention technique	VSM accompanied by mystery motivator, stimulus fading, and reinforcement
Number of participants	3
Age of the participants	8 and under (two participants turned eight during intervention)
Length of the video recording	5-7 minutes
Person administered the recording	Mother of the child
Location for VSM sessions	Inside the child's emptied classroom
Number of VSM sessions	Ava & Bella: 1.5 Cate: 2
Recording shown to peers	Ava & Bella: N/A Cate: During the second day of the intervention
Location for SF sessions	Ava & Bella: Inside the emptied classroom, and school hallway Cate: Inside the emptied classroom
Number of SF sessions	Ava and Bella: 7 Cate: 1
Instruments	Observation Form for Video Self-Modeling Sessions Observation Form for Stimulus Fading Sessions

Table 6

Ava's SMQ and SSQ Scores

	Baseline	Post-Intervention	Differences (%)	Follow-Up	Differences (%)
At School (SMQ)	5.00	13.00	160.00	14.00	7.69
With Family (SMQ)	12.00	14.00	16.67	15.00	7.14
In Social Situations (SMQ)	1.00	6.00	500.00	7.00	16.67
At School (SSQ)	11.50	12.50	8.70	13.00	4.00
Total scores	29.50	45.50	54.24	49.00	7.69
Mean scores	**7.38**	**11.38**	**171.34**	**12.25**	**8.88**

Table 7

Belle's SMQ and SSQ Scores

	Baseline	Post-Intervention	Differences (%)	Follow-Up	Differences (%)
At School (SMQ)	6	12	100.00	17.00	41.67
With Family (SMQ)	13	15	15.38	17.00	13.33
In Social Situations (SMQ)	1	5	400.00	7.00	40.00
At School (SSQ)	14	17	21.43	14.00	-17.65
Total scores	34	49	44.12	55.00	12.24
Mean scores	**8.5**	**12.25**	**134.20**	**13.75**	**19.34**

Table 8

Cate's SMQ and SSQ Scores

	Baseline	Post-Intervention	Differences (%)	Follow-Up	Differences (%)
At School (SMQ)	1.00				
With Family (SMQ)	18.00	18.00	0.00	18.00	0.00
In Social Situations (SMQ)	12.00	15.00	25.00	15.00	0.00
At School (SSQ)	2.00	3.00	50.00	3.00	0.00
Total scores	33.00	36.00	9.09	36.00	0.00
Mean scores	**8.25**	**12.00**	**25.00**	**12.00**	**0.00**

Table 9

All Participants' SMQ and SSQ Scores

	Baseline	Post-Intervention	Differences (%)	Follow-Up	Differences (%)
At School (SMQ)	11.00	25.00	127.27	31.00	24.00
With Family (SMQ)	43.00	47.00	9.30	50.00	6.38
In Social Situations (SMQ)	14.00	26.00	85.71	29.00	11.54
At School (SSQ)	27.50	32.50	18.18	30.00	-7.69
Total scores	95.50	130.50	36.65	140.00	7.28
Mean scores	**23.88**	**35.17**	**37.73**	**36.33**	**3.41**

Table 10

Anxiety Level From Classroom Observations

	Baseline	Post-Intervention	Follow-up
Ava (C)	2	1	0
Bella (C)	2	1	1
Cate (C)	1	1	0
Ava (B)	1	1	0
Bella (B)	1	1	0
Cate (B)	0	0	0

Note. "(C)" denotes "during class", and "(B)" denotes "during break."
None=0, Low=1, Medium=2, High=3.

Table 11

Number of Words Spoken From Classroom Observations

	Baseline	Post-Intervention	Follow-up
Ava (C)	0	10	10
Bella (C)	3	10	10
Cate (C)	0	0	0
Ava (B)	10	10	10
Bella (B)	10	10	10
Cate (B)	0	0	0

Note. "(C)" denotes "during class", and "(B)" denotes "during break."
"Too many to count" is replaced by 10 for tabulation.

Table 12

Speech Volume From Classroom Observations

	Baseline	Post-Intervention	Follow-up
Ava (C)	0	2	3
Bella C)	1	2	3
Cate (C)	0	0	0
Ava (B)	1	3	3
Bella B)	1	3	3
Cate (B)	0	0	0

Note. "(C)" denotes "during class", and "(B)" denotes "during break."
Mute = 0, Audible (soft)=1, Audible=2, Audible (loud)=3.

Table 13

Spoken to Number of New People From Classroom Observations

	Baseline	Post-Intervention	Follow-up
Ava (C)	0	3	3
Bella (C)	1	3	3
Cate (C)	0	0	0
Ava (B)	3	3	3
Bella (B)	3	3	3
Cate (B)	0	0	0

Note. "(C)" denotes "during class", and "(B)" denotes "during break."
"3" is used for any undefined numbers greater than 2 (e.g., peers and teacher).

Table 14

Response to Verbal Approaches From Classroom Observations

	Baseline	Post-Intervention	Follow-up
Ava (C)	1.5	3	3
Bella (C)	2	3	3
Cate (C)	1	2	2
Ava (B)	3	3	3
Bella (B)	2.5	3	3
Cate (B)	2	2	2

Note. "(C)" denotes "during class", and "(B)" denotes "during break." Non-responsive=0, Facial expression=1, body gesture=2, Verbal=3.

Table 15

Parent's Observation of Ava

Date	New Verbal Behaviour (Progress and Set Back)
Intervention Phase	
Oct. 31	Engaged in a conversation with an adult cousin in the public
Nov. 1	Read to mom in front of the grandfather
Nov. 6	Spoke to the babysitter
Nov. 9	Spoke to grand-father
Nov. 12	Spoke to supply teacher
Nov. 22	Mouthed to Santa in the public
Nov. 29	Spoke to two aunts and was the spokesperson for her sister Belle to one aunt. In the past, Bella was usually the spokesperson for Ava to people whom she is not comfortable speaking to
Dec. 3	Spoke to mom in front of the babysitter
Post-Intervention Phase	
Dec. 12	Went with Ava to a friend's birthday party without mom and spoke to all friends
Dec. 14	Birthday party at home and spoke softly with some friends' parents

Table 16

Teacher's Observation of Ava

Date	New Verbal Behaviour
Intervention Phase	
Nov. 3	Talks a lot, competition [with the sister] during class
Nov. 4	Talked to the vice-principal
Nov. 5	Spoke many words and all audible during stimulus fading session

Table 17

Parent's Observation of Bella

Date	New Verbal Behaviour
Intervention Phase	
Oct. 22	Spoke to the babysitter
Oct. 31	Engaged in a conversation with an adult cousin in the public
Nov. 6	Spoke to the babysitter
Nov. 9	Spoke to grand-father
Nov. 27	Had a conversation with the reading tutor
Nov. 29	Spoke to one aunt but stopped when mom arrived. Did not speak to another aunt. Mom also noted that it was the first time that Bella was relying on Ava to speak for her to the other aunt. In the past, Bella was usually the spokesperson for Ava to people whom she is not comfortable speaking to
Dec. 3	Spoke to mom in front of the babysitter
Post-Intervention Phase	
Dec. 12	Went with Ava to a friend's birthday party without mom and spoke to all friends
Dec. 14	Birthday party at home and spoke softly with some friends' parents

Table 18

Teacher's Observation of Bella

Date	New Verbal Behaviour
Intervention Phase	
Nov. 3	Competed with sister Ava in class and spoke "a lot" in class
Nov. 4	Spoke to education Assistant while the CT was away
Nov. 26	Spoke to the music teacher (prompted by the CT with the checklist)

Table 19

Parent's Observation of Cate

Date	New Verbal Behaviour
Intervention Phase	
Oct. 20	Whispered/talked in a low voice to a new piano teacher in the school hallway
Post-Intervention Phase	
Oct. 31	Spoke to a classmate while trick or treating, and spoke to two more school friends at cousin's house

Table 20

Teacher's Observation of Cate

Date	New Verbal Behaviour
Intervention Phase	
Oct. 20	Said "good morning" to classroom teacher with prompting from mom
	Whispered to a friend outside the classroom room
Oct. 21	Engaged in a paired video-recording project that required speech, and showed the recording to the whole class
	Spoke to classmates and friends inside the classroom
	Said "good night" to classroom teacher
Oct. 22	Spoke to a classmate and teacher in the library
Post-Intervention Phase	
Oct. 27	Whispered to a classmate and the teacher inside the classroom
	Spoke to a friend inside the classroom at the end of the day
Oct. 28	Spoke to two friends
Oct. 29	Asked teacher a math question in class
	Spoke to the music teacher in the classroom

Table 21

Child Participants' Response to the Questionnaire

Questions	Responses
Did you like viewing the movie of yourself talking to [the classroom teacher]?	Ava: Yes Bella: Yes Cate: Yes
Do you think it was a good idea to make the movie?	Ava: Yes Bella: Yes Cate: Yes
When you watched the movie in the classroom, you felt:	Ava: Happy Bella: Happy Cate: Nervous
Would you like to keep a copy of the movie that showed you talking to [the classroom teacher]?	Ava: Don't know Bella: No Cate: Yes
Did you like when your friends saw the movie of your talking to [the classroom teacher]?	Ava: (N/A) Bella: (N/A) Cate: Yes
When your friends watched the movie of you talking to [the classroom teacher], you felt:	Ava: (N/A) Bella: (N/A) Cate: Nervous
Would you prefer to view the movie somewhere else? If yes, where?	Ava: No Bella: No Cate: No
Do you think it was a good idea to make the movie? If yes: What do you like best about watching the movie?	Ava: Yes. The little gifts I get to keep Bella: Yes. The little gifts Cate: Yes. That everybody saw me talk
Do you think the movie helped you speak to [the classroom teacher]?	Ava: Yes Bella: I don't know Cate: Yes
Do you think the movie helped you speak to more people now?	Ava: Yes Bella: I don't know Cate: Yes
Do you think we should make similar movies for other kids? If Yes: Who, and Why?	Ava: Yes. Other kids who are shy to talk Bella: Yes. Kids who are shy Cate: No
Could you tell me why you didn't talk before?	Ava: I don't know Bella: No Cate: I was too scared to talk

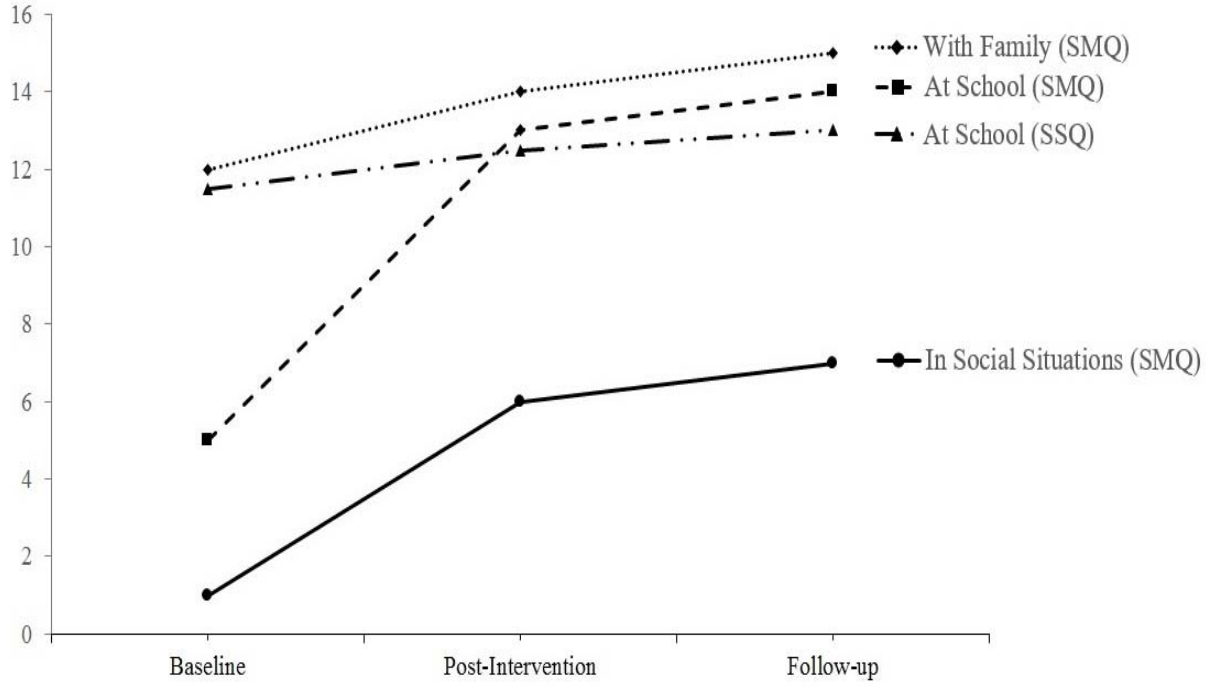

Figure 1. Ava's SMQ and SSQ scores.

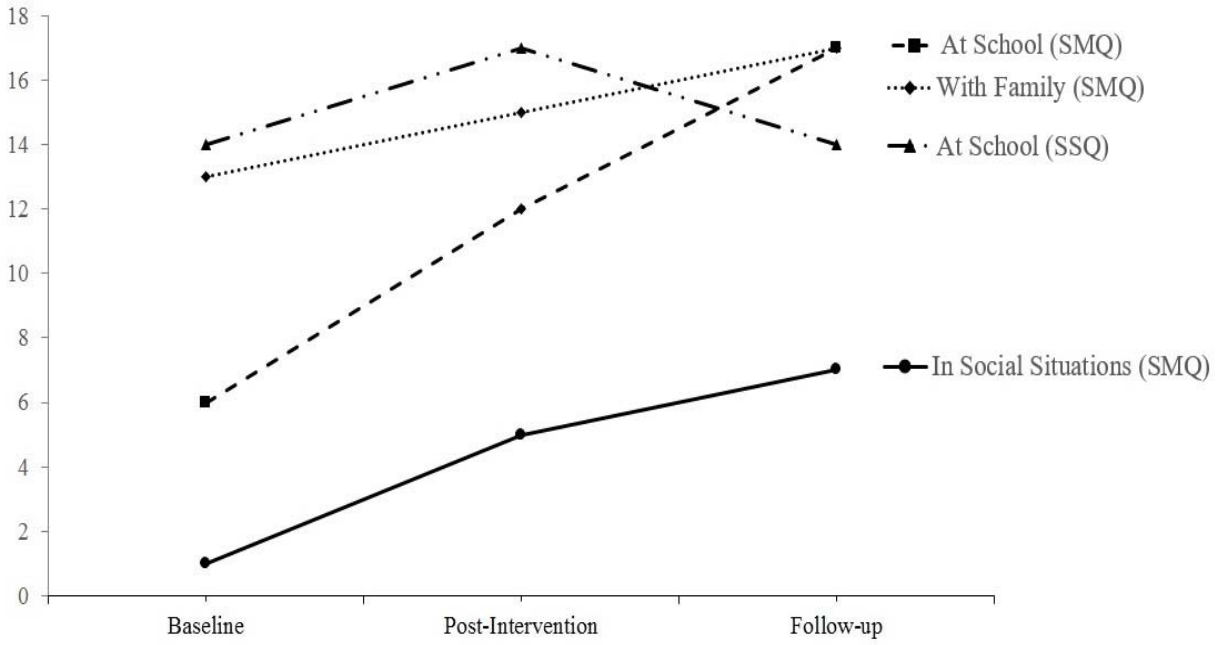

Figure 2. Bella's SMQ and SSQ scores.

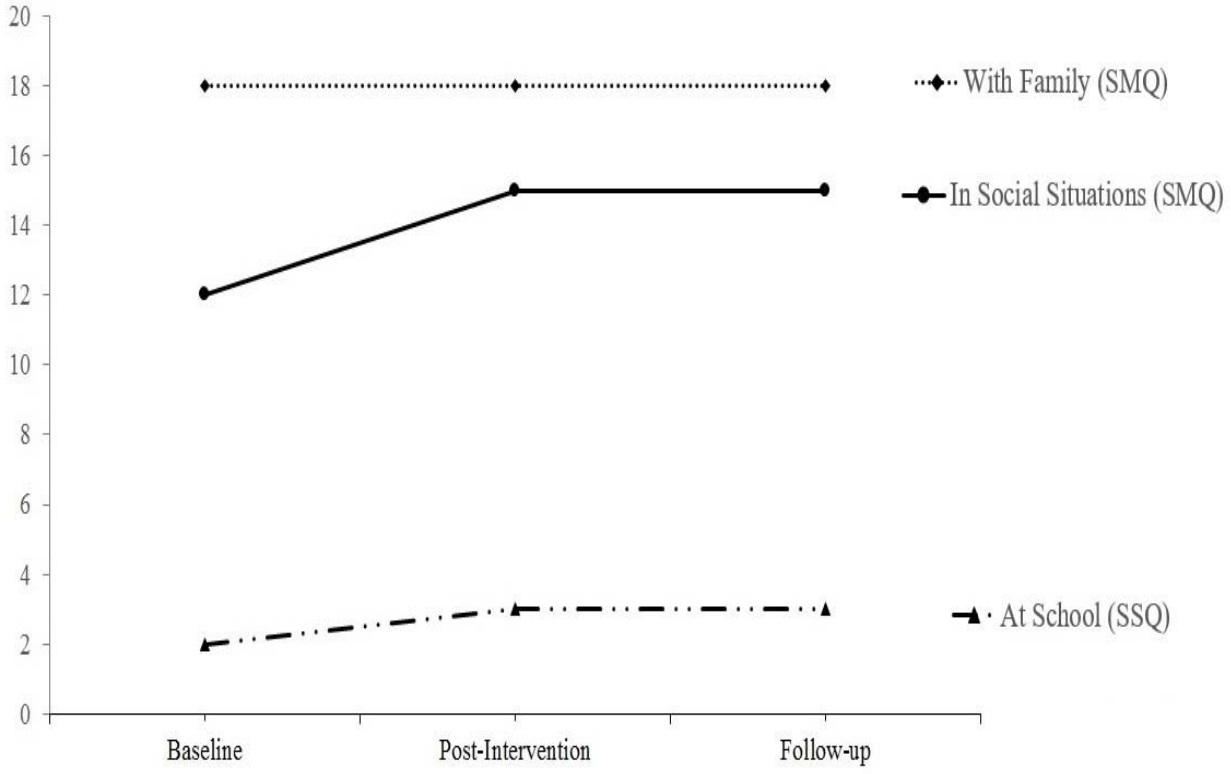

Figure 3. Cate's SMQ and SSQ scores.

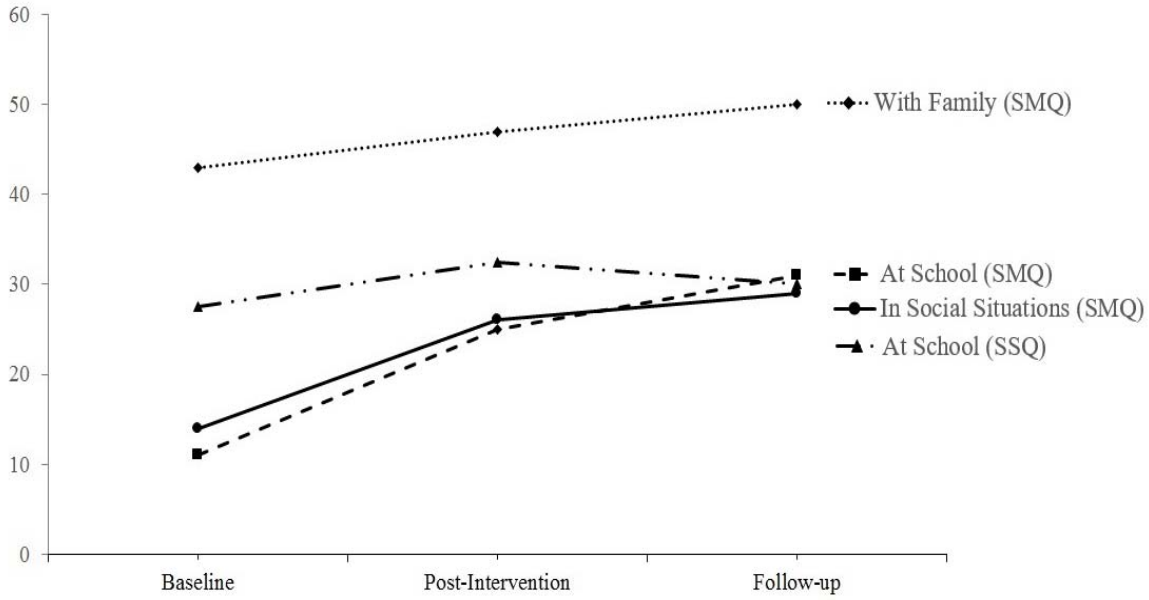

Figure 4. All participants' SMQ and SSQ scores.

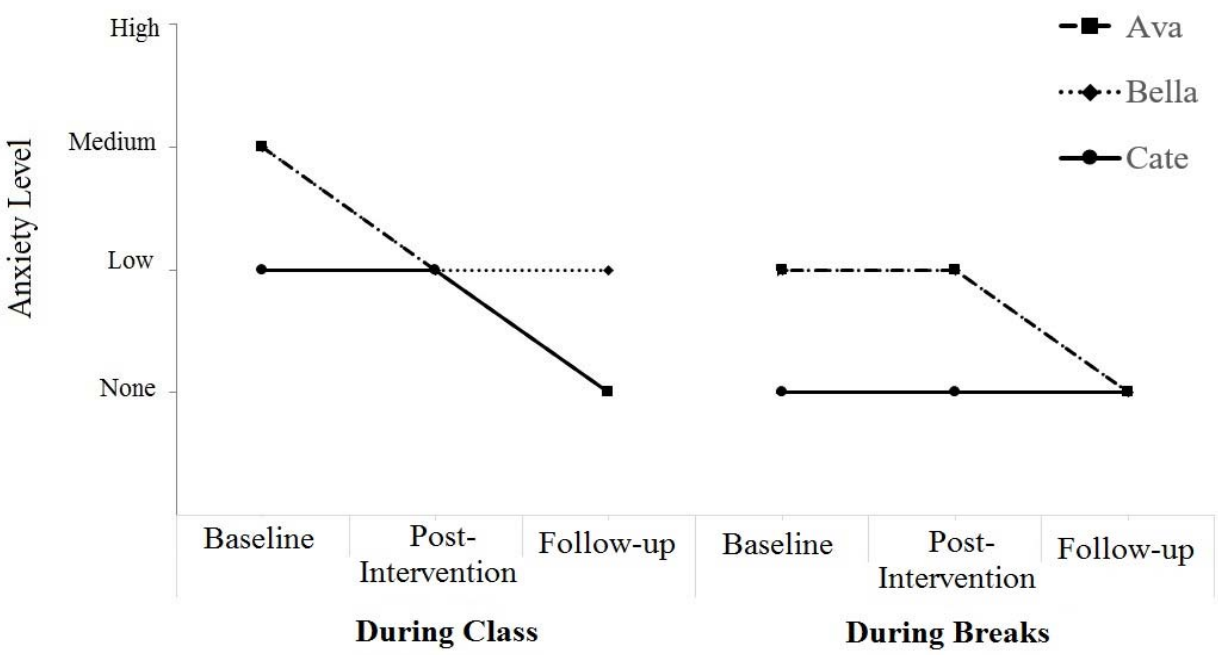

Figure 5. Anxiety levels during class and break, from classroom observations.

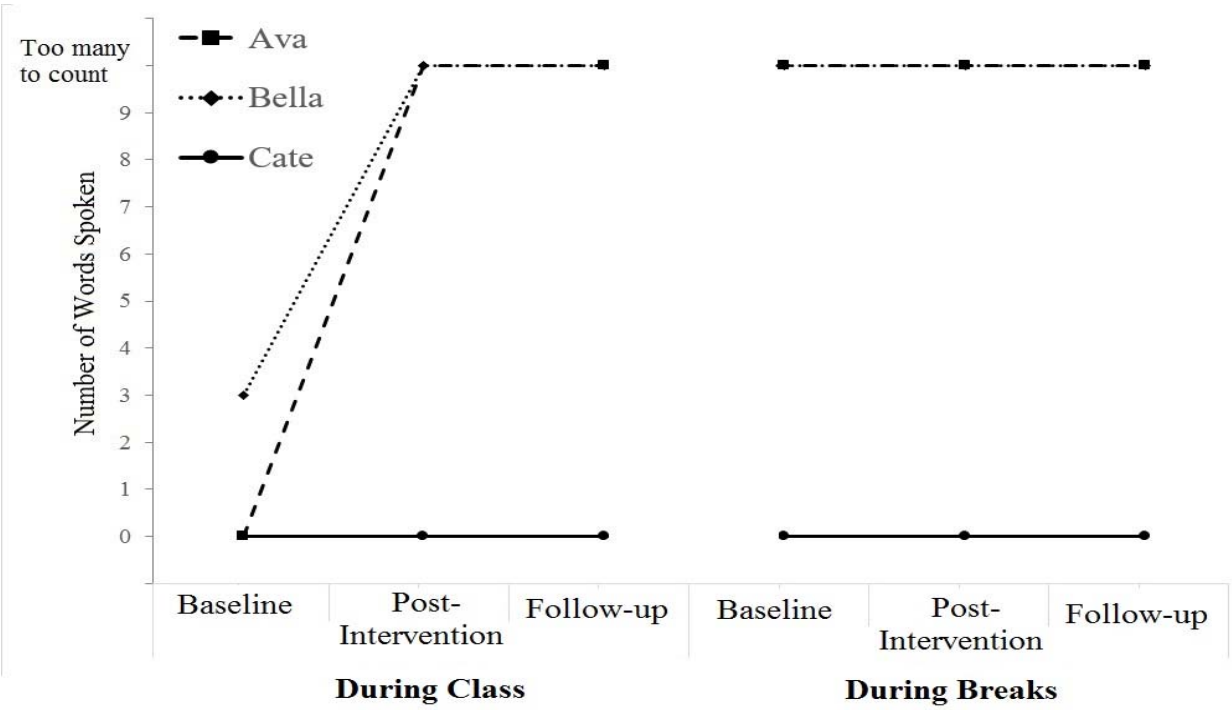

Figure 6. Number of words spoken during class and break, from classroom observations.

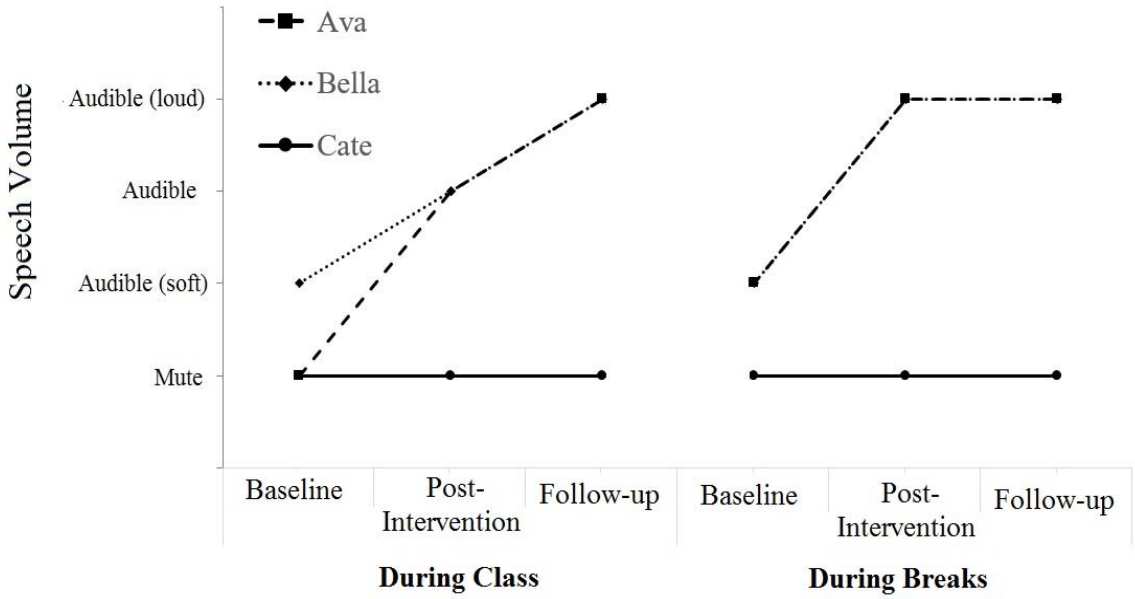

Figure 7. Speech volume during class and break, from classroom observations.

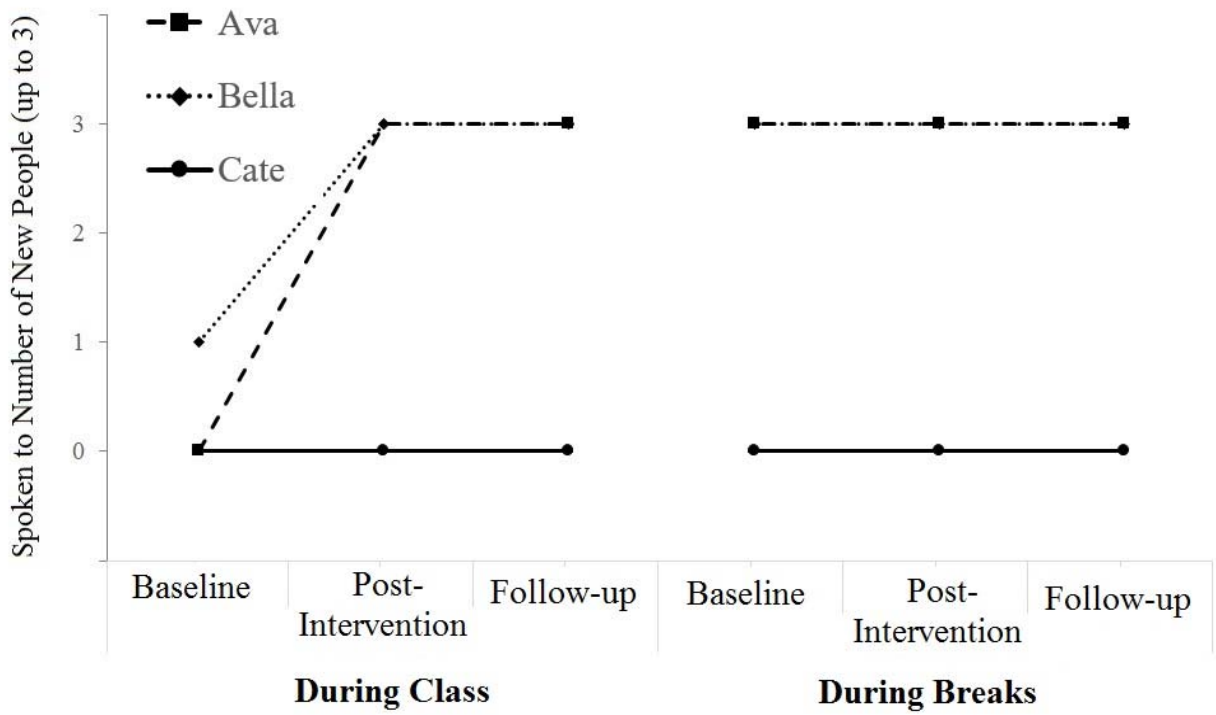

Figure 8. Number of new people spoken to during class and break, from classroom observations.

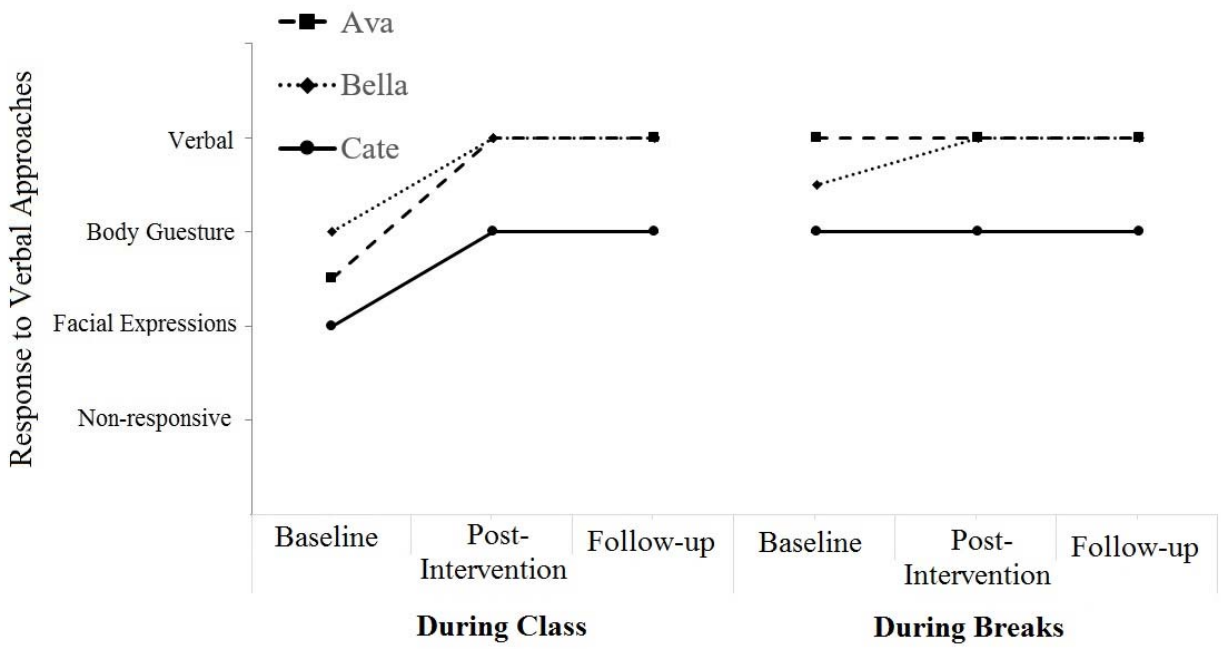

Figure 9. Response to verbal approaches during class and break, from classroom observations.

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Appendix A

Selective Mutism Diagnostic Criteria (APA, 2013)

Definition of Selective Mutism's Characteristics:

- Consistent failure to speak in specific social situations in which there is an expectation for speaking(e.g., at school) despite speaking in other situations.
- The disturbance interferes with educational or occupational achievement or with social communication.
- The duration of the disturbance is at least one month (not limited to the first month of school).
- The failure to speak is not due to a lack of knowledge of, or comfort with, the spoken language required in a social situation.
- The disturbance is not better explained by a communication disorder (e.g., childhood onset fluency disorder) and does not occur exclusively during the course of autism spectrum disorder, schizophrenia, or another psychotic disorder. (American Psychiatric Association, 2013, p. 195).

Appendix B

Selective Mutism Questionnaire (SMQ)

Name of Child:_____ Completed by:_____ Date:_____

Selective Mutism Questionnaire* (SMQ)
(to be filled out by parents)

Please consider your child's behavior and activities of the past month and rate how frequently each statement is true for your child.

AT SCHOOL

	Always	Often	Seldom	Never
1. When appropriate, my child talks to most peers at school.				
2. When appropriate, my child talks to selected peers (his/her friends) at school.				
3. When called on by his or her teacher, my child answers.				
4. When appropriate, my child asks his or her teacher questions.				
5. When appropriate, my child speaks to most teachers or staff at school.				
6. When appropriate, my child speaks in groups or in front of the class.				
How much does not talking interfere with school for your child? (please circle)	Not at all	Slightly	Moderately	Extremely

WITH FAMILY

	Always	Often	Seldom	Never
7. While at home, my child speaks comfortably with the other family members who live there.				
8. When appropriate, my child talks to family members while in unfamiliar places.				
9. When appropriate, my child talks to family members that don't live with him/her (e.g. grandparent, cousin).				
10. When appropriate, my child talks on the phone to his/her parents and siblings.				
11. When appropriate, my child speaks with family friends.				
12. My child speaks to at least one babysitter.				
How much does not talking interfere with family Relationships? (please circle)	Not at all	Slightly	Moderately	Extremely

IN SOCIAL SITUATIONS (OUTSIDE OF SCHOOL)

	Always	Often	Seldom	Never
13. When appropriate, my child speaks with other children who s/he doesn't know.				
14. When appropriate, my child speaks with family friends who s/he doesn't know.				
15. When appropriate, my child speaks with his or her doctor and/or dentist.				
16. When appropriate, my child speaks to store clerks and/or waiters.				
17. When appropriate, my child talks when in clubs, teams or organized activities outside of school.				
How much does not talking interfere in social situations for your child? (please circle)	Not at all	Slightly	Moderately	Extremely

*SMQ under development; use with permission of author, Lindsey Bergman, Ph.D.; lbergman@ucla.edu

Appendix C

School Speech Questionnaire (SSQ)

Name of Child:_____ Completed by:_____ Date:_____

School Speech Questionnaire* (SSQ)
(to be filled out by teacher)

Please consider the child's behavior and activities of the past month and rate how frequently each statement is true for the child.

AT SCHOOL

	Always	Often	Seldom	Never
1. When appropriate, the child talks to most peers at school.				
2. When appropriate, the child talks to selected peers (his/her friends) at school.				
3. When called on by his or her teacher, the child answers.				
4. When appropriate, the child asks his or her teacher questions.				
5. When appropriate, the child speaks to most teachers or staff at school.				
6. When appropriate, the child speaks in groups or in front of the class.				
7. How much does the failure to speak interfere with school for this child? (please circle)	Not at all	Slightly	Moderately	Extremely

*SMQ under development; use with permission of author, Lindsey Bergman, Ph.D.; lbergman@ucla.edu

Appendix D

Child's Background Information as Reported by Parent

Information provided by:_____ Relationship to the child:_____

1. Child's name:_____ 2. Date of birth:_____

- Gender:_____ 4. Place of birth:_____
- Culture background:_____
- First language (mother tongue):_____
- Other language(s) spoken at home:_____
- Birth order of the child:_____
- List all siblings and ages, including this child: _____
- Are there any sibling(s) with selective mutism (SM)? If so, who?_____
- Do you think you, or any other family member or relative may have suffered (or is suffering) from SM or any other anxiety disorder? Please provide details_____

  _____
- When and how did you discover or become aware that your child may have SM? Please explain and provide details such as the age of your child when SM first occurred, and where:

  _____
- Has your child expressed an interest/willingness to speak to others? Please explain.

  _____
- Does your child refuse to go to school or complains about not feeling well in the morning? If so, please explain:_____
- Do you think SM is (or has been) negatively affecting your child's functioning and or development? If so, how and in which ways?

  _____

  _____
- What do you worry most about, and or hope for your child?

  _____

- Have you sought help to address SM for your child? If so, from whom, and what was the outcome?_____

  _____

  _____

- How would you describe your child's speech activity at home (e.g., a chatter box, no different than an "average" child, etc.). Please explain:

  _____

- Please check the following that describe your child:

  □stubborn □defiant □easy going □ easily upset □ caring □ loving

  □loves the outdoors □ prefers to stay at home □ happy □ sad □ depressed

  □timid□ worrisome □ has nightmares

- Please provide the following pertaining to your child's speaking ability:

Name of the person your child speaks to	Location of speech	Voice tone (whisper, normal...etc)

- Are you aware of any other condition or "problematic" behaviour (e.g., refuses to go to public washroom, other phobia, separation anxiety, hearing problem...etc) of your child? Please explain:

  _____

- Has/Had your child received any treatment for SM? □ Yes □ No

  If yes, what type(s):_____

  When:_____Duration:_____

  Was it helpful?_____ Why?_____

Thank you for taking the time to complete this questionnaire. Your input is greatly appreciated!

Appendix E

Child's Information Within the School Context as Reported by the Classroom Teacher

Teacher's name:_____

Child's name:_____ Age and Grade:_____

1. The child is enrolled in:

□ Regular class

□ Resource withdraw

□ Self-contained class

2. The child's academic level:

□ Average

□ Below average

□ Above average

□ Other:_____

3. The child's social functioning (i.e., playing/sharing/getting along with peers...etc):

□ Typical with kids his/her age

□ Atypical.

How?_____

_____

_____

_____

4. How would you describe the child:

□ Well behaved

□ Stubborn

□ Withdrawn

□ Appears sad

□ Happy

□ "Normal", other than not speaking

□ Other:_____

5. Do you remember how the child behaved during the first day of school? Please describe.

_____

_____

6. When and how did you discover that the child does not speak? Please explain.

_____

_____

7. Does the child speak to anyone at school? If so, please provide details (e.g., speak/whisper to (numbers of) friends etc).

_____

_____

8. What types of activities does the child like (or have no trouble) engaging in? With whom, and where?

_____

_____

9. Is there any behaviour that may indicate other potential problems (e.g., refuses to go to school's bathroom)?

_____

_____

10. Is the child provided with an IEP or any accommodations?

_____

_____

11. Any other information you wish to share?

_____

_____

Thank you for taking the time to complete this questionnaire. Your input is greatly appreciated!

Appendix F

Open-ended Questionnaire to Explore Teacher and Parent's Perspective and Experience With Augmented VSM

Parent's and Teacher's Perspectives of using augmented Video Self-Modeling for Selective Mutism Intervention

Teacher's Name:_____ Parent's name:_____

Child's name:_____

- Do you view augmented VSM as an effective protocol for SM, why?
- Do you think augmented VSM is a non-intrusive technique for SM, why?
- Has the result from the intervention meet your expectation?
- What is your overall experience of using augmented VSM on children/students with SM?
- What has the impact of this intervention been? For example, have you notice a change?
- Did you have any concerns/questions/issues in regards to using the augmented VSM approach for SM throughout the entire intervention? Please specify.
- What are the specifics that you liked/disliked about the entire study? Please explain.
- Is there any aspect(s) you feel could have been done differently? Please explain.
- Did you have any concerns/questions/issues in regards to using the augmented VSM approach for SM throughout the entire intervention? Please specify.
- Do you think the method should be adopted/duplicated to help other students with SM?
- Do you think this intervention would be appropriate for other behaviour problem? If so, which one, and why?
- Do you think the method should be adopted/duplicated to help other students with SM?
- It there anything else you would like to share about SM or augmented VSM in general?

The following additional questions are for teachers only:

- What specific strategies or information have you learned/gained from this intervention?
- Would these specific strategies or knowledge be transferred to assist other students who need accommodation (e.g., children with other type of condition/disorder)? Please explain.

Appendix G

The Child's Perspectives of Using Video Self-Modeling for Selective Mutism Intervention

Child's name:_____ Parent:_____

- Did you like viewing the movie of yourself talking to _____?

 Yes  No

- Do you think it was a good idea to make the movie?

 Yes  No

- When you watched the movie in the classroom, you feel:

 happy  nervous  scared  I feel nothing

- Would you like to keep a copy of the movie that showed you talking to _____?

 Yes  No

- Did you like when your friends saw the movie of your talking to _____?

 Yes  No

- When your friends watched the movie of you talking to _____, you felt:

 happy  nervous  scared  I feel nothing

- Would you prefer to view the movie somewhere else? If yes, where?_____

 Yes  No

- Do you think it was a good idea to make the movie?

 Yes  No

  - If yes: What do you like best about watching the movie (parent can help to convey)?

    _____

  - If no: Why not, and what you didn't like about the movie (parent can help to convey)?_____

- Do you think the movie helped you speak to _____?

 Yes  No

- Do you think the movie helped you speak to more people now?

 Yes  No

- Do you think we should make similar movies for other kids?

 Yes  No

  - If yes: Who, and why (parent can help to convey)?

    _____

  - If no: Why not (parent can help to convey)?

    _____

16A. (If the child is speaking): Could you tell me why you didn't talk before?

_____

_____

16B. If the child is still not speaking: Could you tell me why you don't talk?

□Was there something blocking your throat?

□Were you too scared to talk?

□ You didn't feel like talking?

□ Other reason (via parent):_____

Appendix H

Parent Daily Ratings of Child Behaviours (DRCB)

PARENT DAILY RATINGS OF CHILD BEHAVIORS (DRCB)

DIRECTIONS: Record the numbers of words your child spoke, whispered or mouthed today in the following situations. Rate how loud your child's speech was on a 0-10 scale where 0= not at all audible and 10 = completely audible. Use any number from 0 to 10.

0 1 2 3 4 **5** 6 7 8 9 **10**
not audible **moderately** **completely**

IN PUBLIC

# words spoken	# words whispered	# words mouthed	Audibility

ON THE PHONE

# words spoken	# words whispered	# words mouthed	Audibility

AT HOME

# words spoken	# words whispered	# words mouthed	Audibility

DIRECTIONS: Record the people that your child spoke, whispered or mouthed to today in the following situations, by answering yes or no. Please circle YES or NO.

IN PUBLIC

Mouthed family YES NO friend YES NO teacher YES NO
other person YES NO

Whispered family YES NO friend YES NO teacher YES NO

other person YES NO

Spoke family YES NO friend YES NO teacher YES NO
other person YES NO

PHONE

Whispered family member YES NO friend YES NO teacher YES NO

Spoke family member YES NO friend YES NO teacher YES NO

AT HOME

Mouthed family member YES NO friend YES NO other person YES NO

Whispered family member YES NO friend YES NO other person YES NO

Spoke family member YES NO friend YES NO other person YES NO

Did your child speak, whisper, or mouth to someone that he/she does not normally speak to? **YES NO**
If yes, please indicate who and describe the amount and audibility of words communicated _____

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Appendix I

Teacher Daily Ratings of Student Behaviours (DRSB)

TEACHER DAILY RATINGS OF STUDENT BEHAVIORS (DRSB)

DIRECTIONS: Record the numbers of words the student spoke, whispered or mouthed today in school. Rate how loud the student's speech was on a 0-10 scale where 0= not at all audible and 10 = completely audible. Use any number from 0 to 10.

0 1 2 3 4 **5** 6 7 8 9 **10**
not audible **moderately** **completely**

# words spoken	**# words whispered**	**total # words mouthed**	**Audibility**
_____	_____	_____	_____

DIRECTIONS: Record whom the student spoke, whispered or mouthed to today in the following situations, by answering yes or no. Please circle YES or NO.

IN CLASSROOM

Mouthed classmate YES NO friend YES NO teacher YES NO

Whispered classmate YES NO friend YES NO teacher YES NO

Spoke classmate YES NO friend YES NO teacher YES NO

DURING RECESS

Mouthed classmate YES NO friend YES NO teacher YES NO

Whispered classmate YES NO friend YES NO teacher YES NO

Spoke classmate YES NO friend YES NO teacher YES NO

AT LUNCH

Mouthed classmate YES NO friend YES NO teacher YES NO

Whispered classmate YES NO friend YES NO teacher YES NO

Spoke classmate YES NO friend YES NO teacher YES NO

DURING SPECIALS

Mouthed classmate YES NO friend YES NO teacher YES NO

Whispered classmate YES NO friend YES NO teacher YES NO

Spoke classmate YES NO friend YES NO teacher YES NO

Did the student speak directly to his/her teacher in the classroom? YES NO

If yes, please indicate how many other students were present _____ (none, entire class, etc.).

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Appendix J

Observation Form for Video Self-Modeling Sessions

Child Name:_____ Parent Name:_____

Date: _____Session #: _____ Total time spent: _____

From a scale 0 to 10 (0 = not true at all, to 10 = very true)

During/ After		Scale 0 to 10
1st segment	My child is extremely anxious Please explain:	
	The reward is helping /motivating/calming my child Please explain:	
	I had to encourage/reassure my child to view the footage Please explain:	
2nd Segment	My child is still extremely anxious Please explain:	
	The reward is helping /motivating/calming my child Please explain:	
	I had to encourage/reassure my child to view the footage Please explain:	
	My child became more comfortable this round Please explain:	
3rd Segment	My child is still extremely anxious Please explain:	
	The reward is helping /motivating/calming my child Please explain:	
	I had to encourage/reassure my child to view the footage Please explain:	
	My child became more comfortable this round Please explain:	

4th Segment	My child is still extremely anxious Please explain:	
	The reward is helping /motivating/calming my child Please explain:	
	I had to encourage/reassure my child to view the footage Please explain:	
	My child became more comfortable this round Please explain:	
5th Segment	My child is still extremely anxious Please explain:	
	The reward is helping /motivating/calming my child Please explain:	
	I had to encourage/reassure my child to view the footage Please explain:	
	My child became more comfortable this round Please explain:	
6th Segment	My child is still extremely anxious Please explain:	
	The reward is helping /motivating/calming my child Please explain:	
	I had to encourage/reassure my child to view the footage Please explain:	
	My child became more comfortable this round Please explain:	
7th Segment	My child is still extremely anxious Please explain:	
	The reward is helping /motivating/calming my child Please explain:	
	I had to encourage/reassure my child to view the footage Please explain:	
	My child became more comfortable this round Please explain:	

8th Segment	My child is still extremely anxious Please explain:	
	The reward is helping /motivating/calming my child Please explain:	
	I had to encourage/reassure my child to view the footage Please explain:	
	My child became more comfortable this round Please explain:	
9th Segment	My child is still extremely anxious Please explain:	
	The reward is helping /motivating/calming my child Please explain:	
	I had to encourage/reassure my child to view the footage Please explain:	
	My child became more comfortable this round Please explain:	
10th Segment	My child is still extremely anxious Please explain:	
	The reward is helping /motivating/calming my child Please explain:	
	I had to encourage/reassure my child to view the footage Please explain:	
	My child became more comfortable this round Please explain:	

Again, from the scale 0 to 10 (0 = not true at all, to 10 = very true)

	scale
• I think this approach is appropriate for my child	
• I believe most parents would find this approach appropriate	
• I think this approach is effective for my child	
• I believe most parents would find this approach effective	

• I find this approach non-intrusive	
• I like the procedure used in this approach	
• This approach did not worsen my child's SM	
• This approach did not produce adverse effects (e.g., traumatization) on my child	
• My knowledge in resolving SM has increased with this approach	
• I think this approach may help children with other behaviour problems	
• I would recommend this approach to parents affected by SM	

What's your overall impression/though/perspective of this intervention session?

_____

_____

Appendix K

Observation Form for Stimulus Fading Sessions

Child Name:_____ Parent Name:_____

Date: _____ Session #: _____

Location: _____ Total time spent: _____

Names of peers/people you child does not speak to: _____

How many people whom your child speaks to came in for this session? _____

Who are they in relation to your child? _____

The type of verbal activity: _____

From a scale 0 to 10 (0 = not true at all, to 10 = very true)

	Scale 0 to 10
• Despite speaking to everyone at home, my child is anxious to speak initially	
• My child speaks freely within 30 minutes of probing Please specify how long it took your child to speak:	
• My child stops talking as soon as the first peer entered the room	
• My child seems very nervous/anxious as this peer joins in the activity	
• My child speaks freely within 30 minutes after this peer joined in Please specify how long it took your child to speak:	
• The intervention went smoothly, and the second peer entered the room (if not, skip questions 7 – 15, and continue on question 16)	
• My child stopped talking as soon as the second peer entered the room	
• My child seems very nervous/anxious as this peer joins in the activity	
• My child speaks freely within 30 minutes after this peer joined in Please specify how long it took your child to speak:	
• The intervention went smoothly, and more people entered the room Please specify who, in sequence:	

• My child stopped talking as soon as the third person entered the room	
• My child seems very nervous/anxious as the third person joins in the activity	
• My child speaks freely within 30 minutes after this person joined in Please specify how long it took your child to speak:	
• The intervention went smoothly, and more people entered the room Again, who are these people?	
• At one point, there was more than one person joined into the activity Please describe how many and who:	
• I think this approach is appropriate for my child	
• I believe most parents would find this approach appropriate	
• I think this approach is effective for my child	
• I believe most parents would find this approach effective	
• I find this approach non-intrusive	
• I like the procedure used in this approach	
• This approach did not worsen my child's SM	
• This approach did not produce adverse effects (e.g., dramatization) on my child	
• My knowledge in resolving SM has increased with this approach	
• I think this approach may help children with other behaviour problems	
• I would recommend this approach to parents affected by SM	

What's your overall impression/though/perspective of this intervention session?

_____

_____